Marine Review

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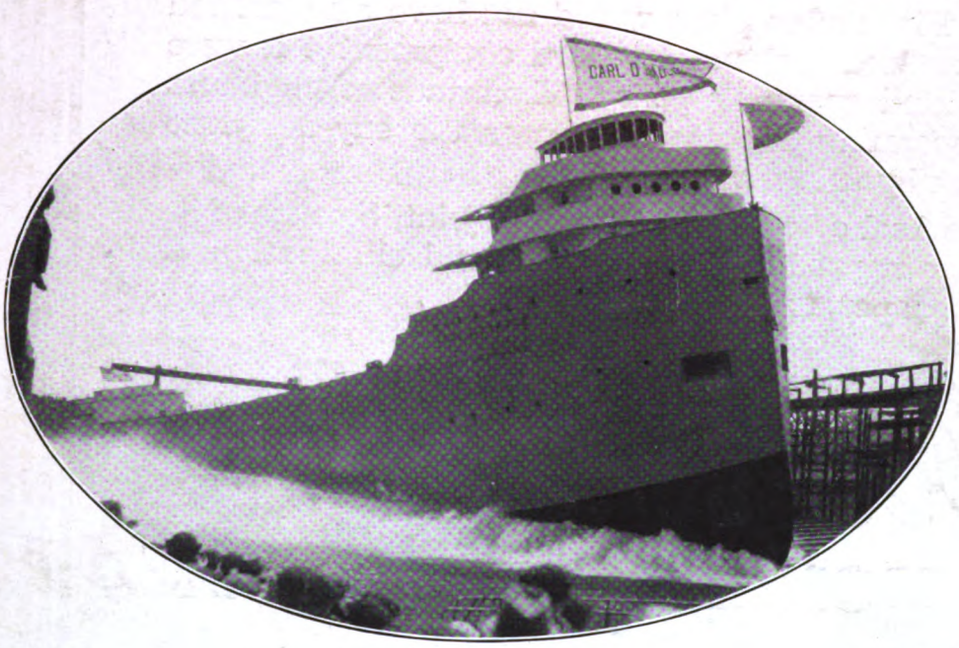
The National Publication Covering the Business of Transportation by Water

May, 1927



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Launched April 9, 1927

Built by

The American Ship Building Company

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Cleveland, Ohio

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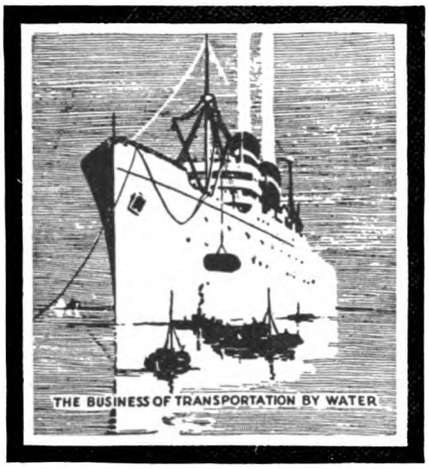
Marine Review

The National Publication Covering the Business of Transportation by Water

CLEVELAND **FOUNDED 1878** **NEW YORK**



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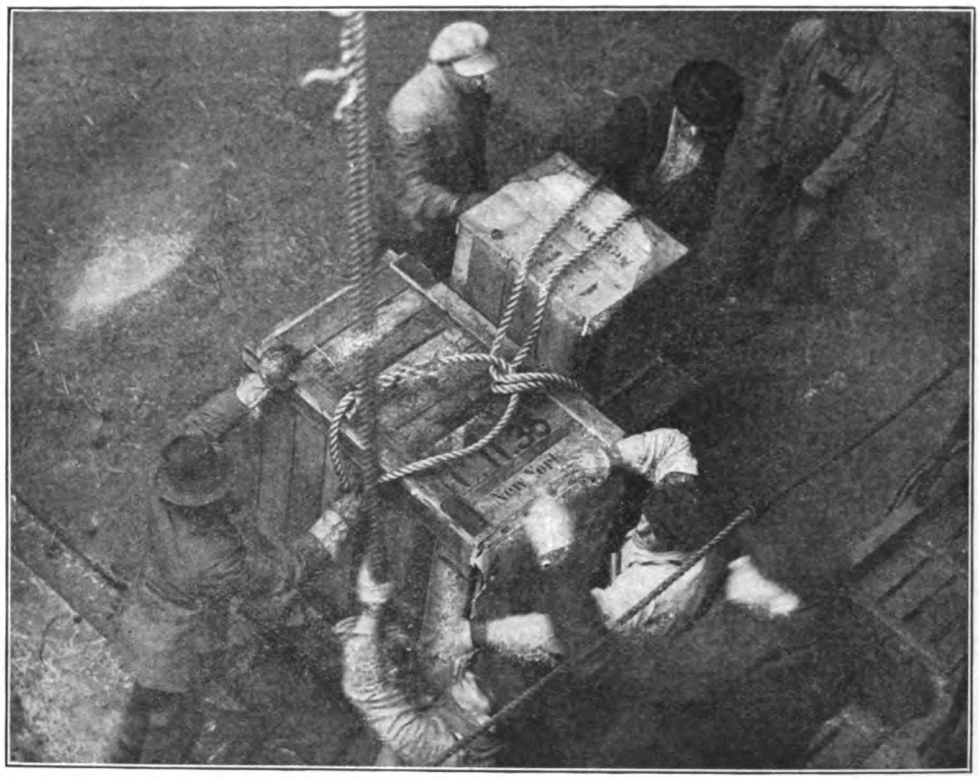

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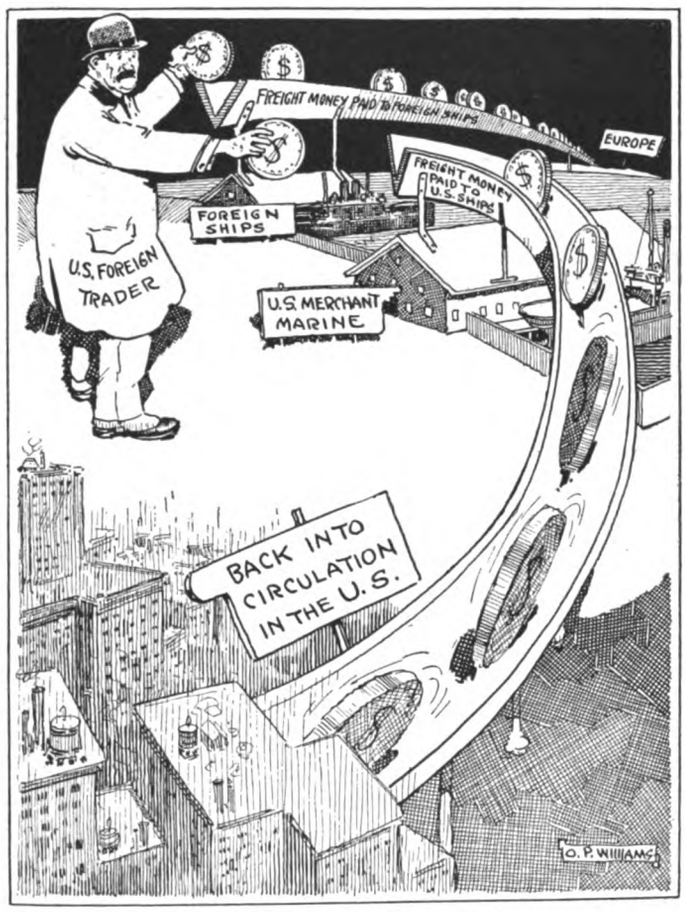
An American Merchant Marine Is Economically Justified

THE late war proved clearly the necessity of an adequate merchant marine. It is not well in emergencies to be dependent upon others. Even the vicissitudes of peace time bring out the fallacy of such dependence. The very economic life of a nation must come first and if ships are needed under such circumstances they will be diverted to forestall disaster, and justly so. The serious economic situation of the growers of cotton and grain in the United States last fall due to lack of customary tonnage to move the crops during the protracted coal strike in England is a typical case in point. Sixty laid up American government owned freighters placed in service at that time provided effective relief. Again when the emergency comes a maritime nation without ships is helpless and it cannot be otherwise.



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But there is also a very definite economic justification for carrying a fair share of our own foreign trade even under normal conditions. It is recognized that all other seafaring nations are similarly entitled to carry an equitable part of our mutual trade. We want to increase our trade and will respect the rights and just ambitions of other nations. The following taken from a letter addressed to the editor of MARINE REVIEW by Gen. A. C. Dalton, president of the Merchant Fleet Corp. shows the economic value to the country as a whole of the present American merchant marine in the foreign trade.

"For the fiscal year 1926, the United States Shipping Board Merchant Fleet Corp. expended for supplies, material and labor in the United States over $80,000,000 earned from cargo revenue, and for the fiscal year 1927 even a larger amount will be spent. It is apparent that it is far better to keep this money at home for our own people than to pay it to foreign lines for expenditure abroad.

"Abraham Lincoln once said: 'If you buy an article abroad, they have the dollar and you have the article. If you buy an article here you have the article and also the dollar.'

"We have been able to keep in operation for the benefit of our own nationals over 300 active shipping board ships in twenty-five established trade routes, carrying our products to all the larger markets of the world. This has been accomplished at an expense to the American taxpayer during 1926 of but 2.2 cents for every dollar's worth of goods carried. During that period the United States shipping board ships covered over 11,270,341 miles, carrying cargoes of exports and imports valued at approximately $850,000,000.

"The only way to keep the American dollars at home is to give employment to Americans in every line of industry. American ships mean American shipyards in which thousands of American workmen can be employed. American ships require American steel and iron, American lumber and American materials of many kinds to build. American sailors should man our ships. American stevedores and dockworkers should load them. American producers of all the supplies required for ships should furnish them for American ships at home.

"Remember that foreign flag ships buy their supplies at home, not in America. The supplies for the 300 vessels of the United States shipping

board cost $38,000,000 during the past year, all paid out to American dealers and producers in America."

Order Turbine Electric Units for New Cutters

Contract for the turbo-electric units of the first three of a total of ten United States coast guard cutters authorized by congress last year was recently awarded to the Westinghouse Electric & Mfg. Co. The design and construction of these coast guard cutters will be under the direction of Capt. Q. B. Newman engineer in chief, United States coast guard.

In a recent interview concerning the new vessels Captain Newman said:

"These new additions to the coast guard fleet, will each be 250 feet overall length, 2000 tons displacement, are to develop a speed of 16¼ knots and are expected to be ready for service June 30, 1928. At present there are no definite duties awaiting them; they will take their place in the regular coast guard service patrolling the coast, relieving vessels in distress or whatever duties may be assigned them.

"The installation for each cutter will be one main and two auxiliary turbo-electric sets. The main set, a steam turbine, alternating current generator and synchronous motor driving a single screw, will develop 3000 shaft horsepower at a speed of 163.5 revolutions per minute. The generator directly coupled to the turbine will develop 2600 kilowatts and the turbine at a steam pressure of 250 pounds with 250 degrees superheat will have a speed of 3600 revolutions per minute. A vacuum of 28½ inches will be maintained.

"All of the auxiliaries will be driven by power supplied direct from the main turbine unit. This is the most important development in marine engineering since the advent of electric propulsion. It is notorious that inefficient auxiliary drives have ruined the economy of otherwise efficient ships. The driving of auxilaries from the main generator at the main turbine efficiency effectually eliminates this waste.

CAPT. Q. B. NEWMAN
Chief Engineer, United States Coast Guard

"Under this arrangement it is possible to supply power for lighting, pumping, radio and all other purposes throughout the vessels direct from the main engine.

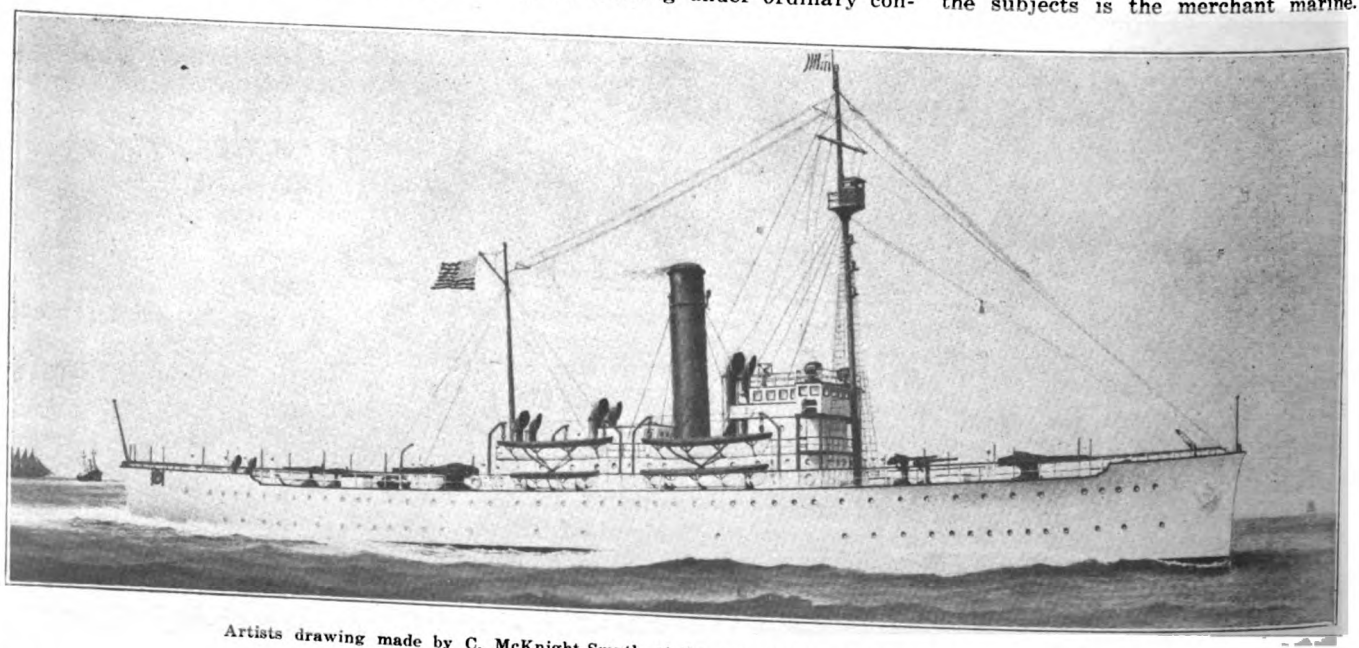
"When cruising under ordinary conditions, enough additional power is generated by the main driving unit to supply all auxiliary needs, the auxiliary turbines being used when in port, or while maneuvering the vessel at reduced speeds. The picking up of the load by the auxiliary sets when the cutter is steaming at reduced speeds is effected by simple automatic control developed by the Westinghouse engineers which operates the steam valve of the auxiliary turbines."

The three unit auxiliary sets will develop about 200 kilowatts each and are intended to supply excitation for the propulsion equipment and power to practically all auxiliaries.

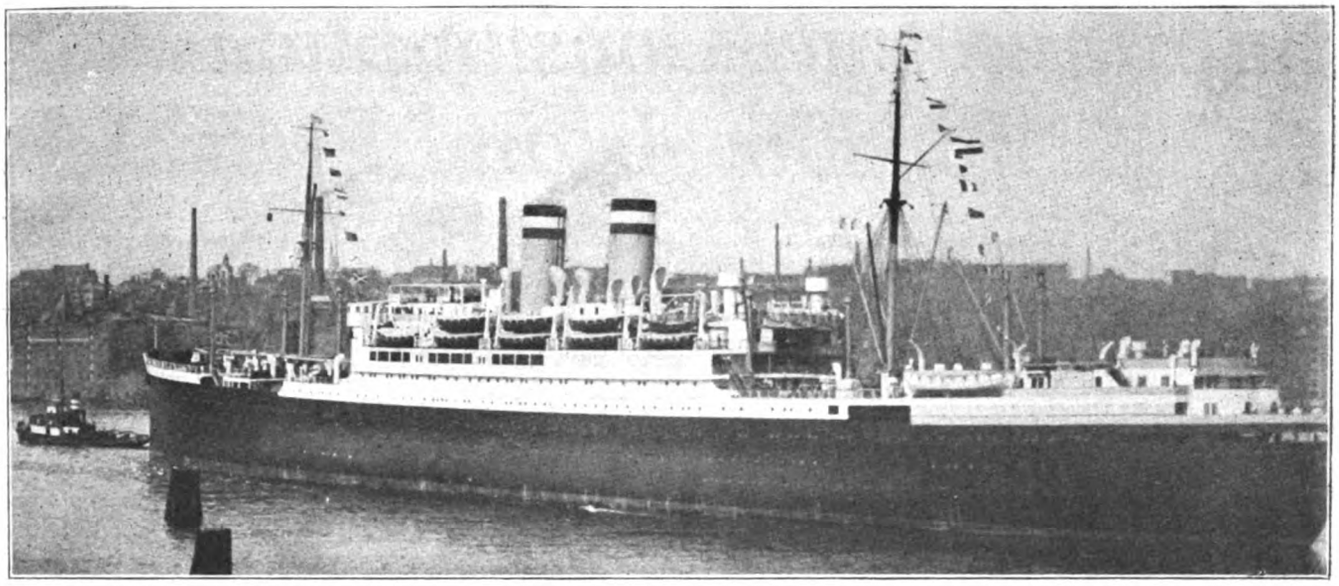
Foreign Trade Council

The National Foreign Trade council an organization composed of American business men, bankers and manufacturers who have helped each other in both export and import trade for many years will hold its fourteenth annual convention at Detroit May 25-27. This convention promises to be of outstanding success. James A. Farrell, president of the United States Steel Corp. is chairman and he says, "The past year has been an encouraging period of American foreign trade advance, for in it our share in the vast international trade of the world reached its highest point whether measured by value or volume."

The council is a national committee for the welfare of overseas commerce and its members do not represent their own companies but serve as representatives of the particular class of business with which they are connected and of the section of the country from which they come. One of the subjects is the merchant marine.



Artists drawing made by C. McKnight-Smyth of the new coast guard cutters authorized by congress



New Hamburg-American Liner NEW YORK *leaving Hamburg on Maiden Voyage, April 1, 1927, bound for new York*

New Hamburg-American Liner Arrives on Maiden Voyage

THE Hamburg-American line steamer NEW YORK, the latest addition to the company's fleet of transatlantic passenger vessels, left Hamburg, April 1, on her maiden voyage to New York, and arrived April 11. The new steamship is the fourth of a class which includes the ALBERT BALLIN, DEUTSCHLAND and HAMBURG. With her tonnage of 21,500 she brings the line's fleet, plying between New York and Hamburg, which now consists of nine vessels, up to a total tonnage of 165,000 gross tons.

The NEW YORK was built by Messrs. Blohm & Voss in Hamburg and meets the highest requirements of the Germanischer Lloyd. Her principal measurements are: length 633 feet, beam 79 feet and depth 56 feet. She is a twin-screw oil-burner, propelled by two turbines working independently of each other, of a combined capacity of 13,000 horsepower which will drive the vessel at an average speed of 16 knots, enabling her to make the passage from Hamburg to New York in about ten days.

The NEW YORK has nine decks, four extending through her whole length and five in the superstructure. Special attention has been paid to the prevention of vibration, and every practical safety device has been installed.

In the details of her passenger accommodation, the NEW YORK closely resembles her predecessors.

The vessel has accommodation for 250 first class passengers. The principle of making all social rooms connect with one another has been carried still further on the NEW YORK.

The first class staterooms, like the social roms, present a combination of comfort and luxury. This accommodation includes four suites, each comprising sitting room, bedroom, baggage room and bathroom; eighteen staterooms-de-luxe with private bath; and 107 other staterooms provided with one or two beds each. Every stateroom has bedsteads and washstands and is supplied with running hot and cold water.

CAPT. KARL GRAALFS
Commander of S. S. NEW YORK

Ample provision has been made for sports and games. The sports deck located on the uppermost deck, an innovation much appreciated on the HAMBUBG, where it was first introduced, is even larger and better than its prototype. It covers a space of about 6000 square feet, 2370 feet of which are occupied by the tennis court. The wide promenade deck is protected against wind and weather by sliding windows extending along its whole length. It provides ample opportunity for walking and for lounging in comfortable deck chairs.

The S. S. NEW YORK also contains accommodation for 420 second class passengers. This class, though simpler, is also finely appointed and as comfortable as that provided for first class passengers. The third class accommodates 460 passengers and resembles the corresponding accommodation on board her sister ships, except that additional improvements have been provided.

All third class passengers are accommodated in two, three or four-berth staterooms, and there are also rooms containing six beds.

Improved Fuel Consumption for Hog Island Freighters

WHEN the initial results achieved by the fuel conservation committee of the Merchant Fleet Corp. for the "President" class of liners were published in the January 1923 issue of MARINE REVIEW the following statement was made: "That is the encouraging feature of the work now under way by this committee; its recommendations and standards are practical; they are possible of accomplishment under service conditions and yet point to a considerable saving." Steady and continued improvement in operation of shipping board vessels for over four years has now convinced the most skeptical of the great practical value of the work of this committee in increasing the efficiency of operation of American ships.

Capt. C. H. McAllister, president of the American Bureau of Shipping is chairman of the committee and C. J. Jefferson is active head under Capt. R. D. Gatewood, manager of maintenance and repair.

Just four years ago in the May 1923 issue of MARINE REVIEW the performance record of the Hog Island class of freight ships was published, and from these actual records the standard performance chart (also published in that issue) was prepared. Ever since this time performance records of this class have been carefully checked, compilations made for six-month periods and ratings awarded.

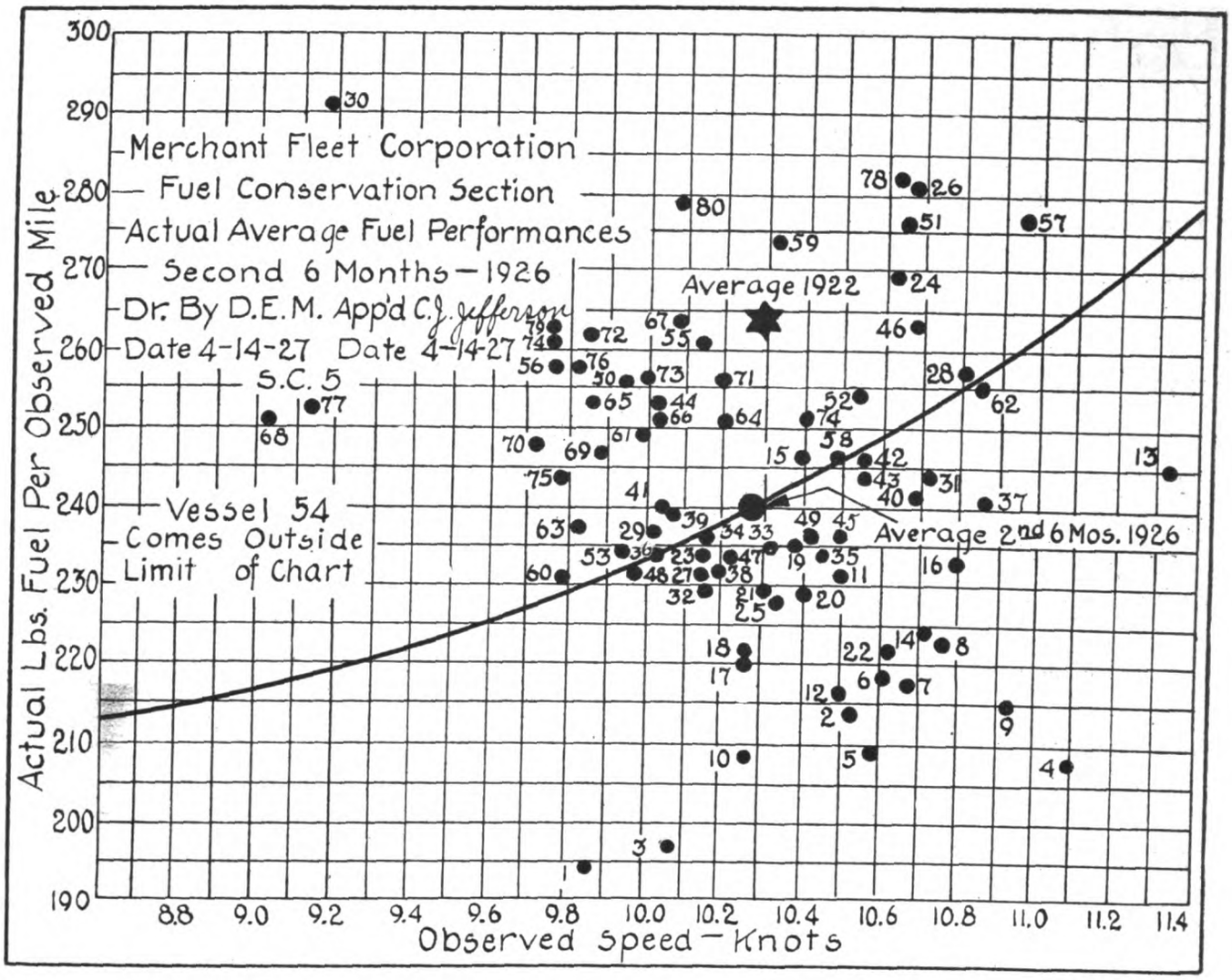
The accompanying Table I gives the actual average performance and standing of each Hog Island freighter for the six-month period, July, 1926 to January, 1927. The particulars noted are: observed speed in knots; fuel per mile in pounds; and the standard efficiency in port and at sea.

In the chart above, observed speed in knots is laid off horizontally while pounds of fuel per observed mile is noted in the vertical scale. Average observed speed in knots and average pounds of fuel per observed mile for each of the Hog Island class of freighters for the last 6 months of 1926 are plotted on this chart. All of these figures are in turn averaged and the result is plotted as the total average observed speed and pounds of fuel per observed mile for this period. As a comparison a similar average result has been plotted for the performance of the same fleet in 1922 before the fuel conservation committee had begun its work. The difference in favor of the performance of this fleet during the last six months of 1926, with the committee actively in control, with that of 1922 before it began to function is convincing evidence of the value of the work now being carried on.

Table I

Performance of the Fleet of Hog Island Type A Freighters for the Six-Month Period—July 1926-January 1927

Index by Ship's Names	Standing in Class	Efficiency Sea	Efficiency Port	Observed Speed Knots	Lb. Fuel Per Obs'd Mile	Index by Class Standing	
AFEL	77	79.1	88.8	9.14	252.8	1	Jolee
AFOUNDRIA	17	97.66	105.05	10.26	220.0	2	Cliffwood
AMERICAN PRESS	32	92.3	108.2	10.15	229.7	3	Quistconck
ARGOSY	78	80.3	73.4	10.64	281.4	4	Carplaka
ARTIGAS	15	99.4	109.92	10.39	246.2	5	Jomar
BIBBCO	50	86.5	101.9	9.94	255.7	6	Carlton
BIRD CITY	57	87.42	88.1	10.95	276.5	7	Chester Valley
BLAIR	8	103.3	99.5	10.76	222.4	8	Blair
BLUE TRIANGLE	54	87.7	88.31	6.85	228.8	9	Cardonia
BRUSH	70	83.4	93.9	9.71	247.5	10	O'Gontz
CAPILLO	66	88.9	63.9	10.02	251.7	11	Collamer
CAPULIN	26	94.1	95.51	10.67	280.7	12	Conness Peak
CARDONIA	9	101.7	106.1	10.93	215.0	13	Lehigh
CARENCO	63	85.7	88.7	9.83	237.3	14	Maiden Creek
CARLTON	6	102.8	129.4	10.61	218.5	15	Artigas
CARPLAKA	4	105.4	103.6	11.10	207.8	16	Saco
CASEY	23	95.1	101.7	10.14	233.6	17	Afoundria
CASPER	52	85.8	109.2	10.54	254.3	18	Cody
CHESTER VALLEY	7	102.6	109.98	10.68	217.5	19	Coahoma County
CHICKASAW	28	93.99	95.69	10.81	256.9	20	Prusa
CITY OF ALTON	56	87.59	88.25	9.76	257.5	21	Sapinero
CITY OF FAIRBURY	60	87.44	87.37	9.80	230.7	22	Lorraine Cross
CITY OF FLINT	46	89.85	93.54	10.69	263.8	23	Casey
CITY OF ST. JOSEPH	72	78.45	108.59	9.85	261.7	24	Minnequa
CLAVARACK	58	88.8	70.8	10.49	246.4	25	Independence Hall
CLEARWATER	36	91.1	108.33	10.08	235.5	26	Capulin
CLIFFWOOD	2	105.76	106.04	10.53	213.7	27	Saguache
CLONTARF	47	89.89	93.27	10.21	234.6	28	Chickasaw
COAHOMA COUNTY	19	97.74	96.58	10.39	235.0	29	Schoodic
CODY	18	97.29	104.9	10.26	221.1	30	Schenectady
COELLEDA	71	83.49	85.0	10.20	251.1	31	Corson
COEUR D'ALENE	49	90.7	81.99	10.41	235.8	32	American Press
COLDBROOK	41	89.08	128.2	10.04	239.8	33	Tomalva
COLD HARBOR	62	88.5	77.3	10.82	256.0	34	Sac City
COLLAMER	11	101.8	99.78	10.50	231.4	35	Wildwood
COLLINGSWORTH	38	90.8	118.3	10.18	231.6	36	Clearwater
COMMACK	68	83.49	88.5	10.08	263.5	37	Quaker City
CONEHATTA	51	88.0	92.8	10.65	275.9	38	Collingsworth
CONNESS PEAK	12	100.9	107.3	10.50	216.0	39	Saucon
CORSON	31	93.6	95.72	10.71	243.7	40	Sinsinawa
FLUOR SPAR	61	86.0	102.3	9.99	249.7	41	Coldbrook
HOG ISLAND	44	89.6	98.1	10.02	252.8	42	Luxpalile
INDEPENDENCE HALL	25	95.3	95.1	10.33	228.3	43	Scantic
JOLEE	1	105.6	115.6	9.86	193.8	44	Hog Island
JOMAR	5	104.4	106.97	10.59	209.3	45	Salvation Lass
LAFCOMA	79	77.7	87.1	9.75	262.3	46	City of Flint
LEHIGH	13	101.1	99.6	11.34	245.1	47	Clontarf
LIBERTY BELL	48	88.79	111.8	9.96	231.2	48	Liberty Bell
LIBERTY LAND	75	80.8	91.9	9.78	244.0	49	Coeur D'Alene
LORRAINE CROSS	22	94.8	104.5	10.62	222.9	50	Bibbco
LUXPALILE	42	88.76	109.0	10.49	244.3	51	Conehatta
MAIDEN CREEK	14	100.8	100.2	10.72	224.4	52	Casper
MINNEQUA	24	95.84	96.04	10.83	269.6	53	Sangamon
NOBLES	65	85.2	84.4	9.86	253.1	54	Blue Triangle
O'GONTZ	10	102.5	99.76	10.26	207.9	55	Satartia
PIPESTONE COUNTY	80	76.9	90.3	10.08	278.6	56	City of Alton
PRUSA	20	95.82	108.6	10.40	229.5	57	Bird City
QUAKER CITY	37	92.5	95.47	10.87	240.9	58	Clavarack
QUISTCONCK	3	104.7	123.2	10.07	196.3	59	Sarcoxia
SACANDAGA	68	81.9	102.1	9.63	251.1	60	City of Fairbury
SAC CITY	34	93.2	96.05	10.14	236.0	61	Fluor Spar
SACO	16	100.2	102.2	10.80	233.1	62	Cold Harbor
SAGAPORACK	74	82.0	83.9	9.75	260.5	63	Carenco
SAGUACHE	27	93.97	98.6	10.13	232.1	64	Saugus
SALVATION LASS	45	89.14	98.9	10.50	235.5	65	Nobles
SANGAMON	53	87.74	96.81	9.93	233.8	66	Capillo
SAPINERO	21	95.74	111.43	10.31	229.5	67	Commack
SARCOXIE	59	87.0	90.8	10.31	274.5	68	Sacandaga
SATARTIA	55	85.0	106.98	10.13	260.8	69	Winona
SAUCON	39	90.6	106.3	10.06	239.1	70	Brush
SAUGERTIES	76	82.9	71.5	9.81	257.8	71	Coelleda
SAUGUS	64	84.0	99.1	10.07	250.8	72	City of St. Joseph
SCANTIC	43	90.5	94.4	10.49	243.7	73	Schodack
SCHENECTADY	30	95.67	86.7	9.17	290.9	74	Sagaporack
SCHODACK	73	80.9	104.9	10.0	256.0	75	Liberty Land
SCHOODIC	29	91.7	103.3	10.02	236.8	76	Saugerties
SINSINAWA	40	92.4	91.5	10.68	241.1	77	Afel
TOMALVA	33	92.9	99.95	10.32	235.0	78	Argosy
WILDWOOD	35	94.2	81.97	10.42	234.8	79	Lafcomo
WINONA	69	82.5	95.79	9.88	246.7	80	Pipestone County



It is possible to make a direct comparison to show the saving accomplished in the reduced cost of fuel consumed per mile. This by no means represents all of the saving. Through the work of the committee the efficiency of the personnel in all its duties has been improved. There is now a healthy spirit of rivalry leading to better care and operation of all machinery and greater skill in navigation.

The type A Hog Island class of freighters listed in the accompanying table built as a measure of war have proved to be good ships of their kind. A block of 20 were sold and are now being privately operated. Others have also been sold and most of the remainder are in service for the shipping board under private management.

These ships as can be seen from the accompanying illustration are of the three island schooner rigged type with poop bridge and forecastle. The length overall is 401 feet; length between perpendiculars 390 feet; beam, 54 feet; depth 32 feet; load draft 24 feet 5 3/16 inches; deadweight, 7815 tons. A single screw is driven by a General Electric, Curtis type turbine and reduction gears, with steam supplied by three oil burning Babcock & Wilcox watertube boilers.

The improved performance in reduced fuel consumption for the aggregate distance traveled and hours in port during the six-month period July 1926 to January 1927 for the entire fleet listed in the accompanying table, based on $1.74 as the price of fuel oil per barrel, amounts to nearly $400,000. This figure may be arrived at as follows:

Distance traveled 1,755,969 miles; hours at sea 171,178; hours in port 158,263. Fuel in pounds per mile, 239.8; average speed, 10.26 knots; fuel per 24 hours in port 25.06 barrels. The above applies to the last six months of 1926. For 1922 the Hog Island fleet of freighters averaged 264.2 pounds of fuel per mile; the average speed was 10.28 knots and the average fuel per 24 hours in port was 39.70 barrels.

Subtracting the average fuel used in port for the two periods we have 39.70 — 25.06 = 14.64.

Then $\frac{14.64 \times 158263}{24} \times 1.74 =$ $167,800 saving, in port.

Similarly subtracting the average pounds of fuel per observed mile at sea for the two periods we have 264.2 — 239.8 = 24.4 pounds. Then $\frac{24.4 \times 1,755,969}{338} \times 1.74 =$ $220,500 saving, at sea. Adding these together $167,800 + $220,500 = $398,300 as the total saving for distance run and time in port during the six-month period July 1926 to January 1927.

The last six months of 1926 also showed a saving over the first six months of the same year of $54,237 for the distance traveled and $39,188 for the time in port or a total of $93,425. That the speed should be maintained and the fuel consumption be reduced as indicated above for ships now seven to nine years old is a credit to the mechanical features of the vessels, to the officers and men who run them, to the shore staffs of the companies that manage them, and to the fuel conservation committee for its practical advice and supervision.

Lake Carriers Expect Big Year

Annual Meeting and Banquet Held at Cleveland—Slight Increase in Draft—To Erect Memorial to Livingstone—Insurance Rates Increased

J. S. ASHLEY, president at the annual meeting of the Lake Carriers association held at Cleveland April 21 told the members that in spite of the limited season of navigation the bulk freight movement on the Great Lakes in 1926 attained a new high record of 121,289,502 net tons of iron ore, coal, stone and grain. It was also pointed out that the average load draft permissible on the Great Lakes during 1926 was only 18 feet 8½ inches, 9½ inches less than the permissible draft in 1923 the previous record year, when more than 121,000,000 net tons of bulk cargo was moved. A slight increase in draft is looked for this season. That the fleet had been able to break all previous records with less loading depth is due, according to Mr. Ashley's report, to the addition of longer and wider ships and the elimination of smaller vessels, also by the marked increase in loading and unloading facilities combined with unsurpassed car service. Since 1923, 24 steamers of an aggregate capacity of 290,200 tons capacity or an average of 12,100 tons each have been added to the ore carrying fleet while at the same time 12 steamers of an aggregate capacity of 41,000 tons, an average of 3425 tons were dropped.

Divided Deck Watches

A ruling from the attorney general calls for the enforcement by local steam boat inspectors through revocation or suspension of the license of the master of that provision in the seamen's law which calls for a division of watches, three for engine room crew and two for deck crew. Such division of deck watches is unnecessary under conditions on the Great Lakes and is not in accord with the wishes of the seamen on such vessels, it was pointed out by Mr. Ashley. However, it is a law and the shore captains committee of the association recommended that it be put in force. The association, therefore, passed a resolution recommending to its members "that deck crews be divided into watches and stand their regular watches while at sea. On boats where a boatswain is carried it is recommended that he be assigned to the mate's watch. Where there is an unequal number of men the extra man is to be assigned to the mate's watch."

J. S. ASHLEY
Re-elected President Lake Carriers

Officers

Lake Carriers' Association

President
J. S. Ashley

Vice President
L. C. Sabin

General Counsel
Newton D. Baker

Secretary and Treasurer
George A. Marr

Executive Committee

J. S. Ashley, chairman, H. S. Wilkinson, C. L. Hutchinson, H. Coulby, C. D. Dyer, J. J. Boland, G. A. Tomlinson, J. C. Evans, A. E. R. Schneider, A. F. Harvey, H. K. Oakes.

Alternates

J. T. Kelly, A. C. Sullivan, A. W. Thomson, W. P. Schaufele, W. H. McGean, J. B. Ayers, James McAlpine, A. H. Ferbert, W. G. Stewart, A. E. Cornelius.

Directors

Cleveland

J. S. Ashley, J. B. Ayers, F. A. Bailey, Carmi A. Thompson, Newton D. Baker, Fayette Brown, C. C. Canfield, H. Coulby, R. W. England, A. H. Ferbert, A. F. Harvey, C. L. Hutchinson, Charles O. Jenkins, John T. Kelly, Joseph S. Woods, F. I. Kennedy, A. T. Kinney, Walton H. McGean, H. K. Oakes, C. J. Peck, H. A. Rock, L. C. Sabin, W. P. Schaufele, A. E. R. Schneider, George M. Steinbrenner, H. C. Strom, W. G. Stewart, A. W. Thomson, G. A. Tomlinson, George H. Warner and George A. Marr.

From Other Cities

J. J. Boland, J. C. Evans, J. B. Rodgers and A. E. Cornelius of Buffalo, H. F. Hughes and A. C. Sullivan of Chicago, C. D. Dyer and W. P. Schneider Jr., of Pittsburgh and H. S. Wilkinson of Syracuse.

The city of Duluth has under consideration the replacement of the aerial bridge over the canal, between the city and Minnesota point, by a lift bridge. Mr. Richards, city attorney of Duluth, and J. E. Harrington, of Harrington, Howard and Ash, consulting engineers, Kansas City, responsible for the plans of the proposed lift bridge, appeared at the Lake Carriers' meeting, showed illustrations of the new bridge and explained its operation with the view of getting the support and approval of the Lake Carriers' association in presenting the project for final approval to the United States engineers. After brief discussion it was decided to refer the matter to a committee composed of members of the shore captains committee augmented by two or more lake captains in active service. This committee will meet with the designer of the proposed bridge and representative of the city of Duluth. A recommendation will then be made to the Lake Carriers for action on the proposal.

The manager of the Cleveland Cliffs fleet, A. E. R. Schneider, cited examples of the absolute worthlessness of the present grain bill of lading insofar as it is intended to protect the vessel owner and he urged the association to give serious consideration to this subject with the view of obtaining a more equitable bill of lading which would meet conditions both here and in Canada. A. A. Wright, president of the Dominion Marine association, Toronto, Ont., said that the present bill of lading worked even greater hardship on Canadian vessel owners and that his association is now ready to co-operate in the suggestion made by Mr. Schneider. This matter will be definitely taken up by respresentatives of both associations.

Memorial to William Livingstone

A monument to the memory of William Livingstone, first president of the Lake Carriers' association and for twenty-five years its leading spirit, has been proposed. Mr. Coulby presented to the association a sketch of the memorial. It is proposed to erect a shaft of stone to be used as a lighthouse and to be located on Belle Island, Detroit. A statue of Mr.

Livingstone in bronze on a stone pedestal is to be placed on an esplanade in front of the light. The light house will serve as a range light and the hydrographic department of the navy has agreed to maintain it. As a mark of tribute and affection to a great leader Mr. Coulby suggested that each member of the association be assessed a sum of approximately 2½ cents a ton to be levied over a period of three years or so. As there are 2,000,000 tons represented, the amount raised would amount to $50,000 which is one-half of the total estimated cost of the memorial, the other half to be raised by citizen of Detroit. The suggestion met with unanimous approval and a resolution was passed to that effect, the details to be worked out through the executive committee.

Officers of the association were all re-elected. The executive committee and alternates and directors remained the same with the exception of the resignation of Gordon B. Houseman and the election in his place of A. E. Cornelius of Buffalo. Mr. Cornelius was also elected as an alternate of the executive committee.

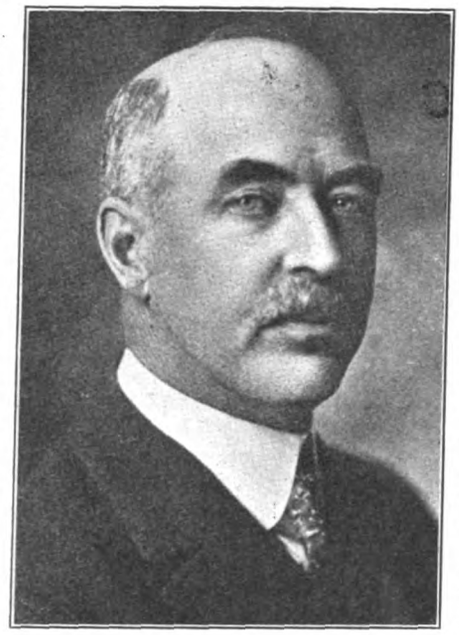
Protective Association Meets

After luncheon a meeting was called of the members of the Great Lakes Protective association which insures up to 25 per cent of vessel insurance carried by its members. J. S. Ashley presided as chairman and submitted his annual report for 1926. Though the fleets of the members of the association came through without a total loss there were many serious and unusual accidents which in the aggregate produced more than the ordinary losses. The report covered briefly all of the more important losses and Mr. Ashley went on to say that the great bulk of the losses were avoidable and should never have occurred and that the main reason why they did occur was continued disregard of the dangers incident to fog and thick weather.

As far as the losses for 1926 can be computed at this time there is likely to be a surplus over the initial contribution to be returned to subscribers of about $57,000.

The members of the Protective association were distinctly stirred by the announcement that the American underwriters had declared a horizontal increase of ⅝-cents and in some cases an additional increase. This means that the lowest net insurance to the fleets of best standing will be at least 3.15 per cent, going up as high as 4½ per cent for some others. As the cost of the Protective association's own insurance over five years has only amounted to 2.66 per cent, it is felt that the new rates are excessive. During five years the Protective association has been able to declare an average yearly profit to its members of 18.25 per cent.

Vigorous representations were made to the underwriters that members of the Protective association should be given preferential treatment in accordance with the good record established for safety. The underwriters, however, refused, pointing out that they had suffered severe losses and that they could not continue the lower rates. It was the general opinion at the meeting that the rates of insurance on Great Lakes vessels of the bulk freighter type should be based on their own record and that these vessels and all other types trading on the St. Lawrence and through the canal should not be placed in the same category which is exactly what the insurance people are doing. At the suggestion of Arthur Sullivan, Chicago, a resolution was passed to have Mr. Ashley report to the underwriters that it was the sense of the meeting that the Great Lakes Protective association should get the benefit in rates due its good record.



L. C. SABIN
Re-elected Vice President Lake Carriers

It was suggested that the amount of insurance carried in the Protective association which is now 25 per cent might be increased to 50 per cent. G. M. Steinbrenner proposed that this matter and other matters pertaining to underwriters' rates be carefully considered not later than next fall in ample time for the following season.

Total contributions from members of the Great Lakes Protective association and from interest on deposits, etc. for 1926 amounted to $441,637.71, while the expenses and losses paid less recoveries amounted to $334,-097.81, indicating a favorable balance of $57,539.90.

All officers and members of the advisory committee were re-elected as follows: J. S. Ashley, chairman, George A. Marr, secretary, A. E. R. Schneider, treasurer, J. A. Armstrong, assistant treasurer, Harvey D. Goulder, counsel; on the advisory committee, J. S. Ashley, chairman, A. E. Cornelius, H. Coulby, C. D. Dyer, R. W. England, A. F. Harvey, C. L. Hutchinson, J. T. Kelly, F. I. Kennedy, A. T. Kinney, H. K. Oakes and A. E. R. Schneider.

Lake Carriers' Annual Dinner

The annual meeting of the Lake Carriers' association ended with a banquet at the Hotel Cleveland. Distinguished guests and members of the association were present. Hon. Newton D. Baker served as toastmaster. The keynote of the speaking was a review of the fight which has been going on against the diversion of water at Chicago. Evidence on both sides has been presented before C. E. Hughes, acting for the Supreme Court of the United States. Final presentation of argument will begin May 30 and it is hoped that recommendations will be made by Mr. Hughes to the Supreme Court when it meets in the fall. Mr. Baker gave unstinted credit to the help he had received in the preparation of his presentation in the interests of the Lake Carriers from Mr. C. L. Sabin and the support in congress from Senator Frank B. Willis, and Congressman Burton. Mr. Baker also especially mentioned R. T. Jackson who had had in hand the actual preparation of the case against Chicago. The general tenor of the speeches indicated that the fight to stop Chicago's water steal would be continued even in the improbable event that the case is lost before the Supreme Court.

Among the guests and speakers were the following: Senator F. B. Willis; Congressmen Burton and Mooney; A. A. Wright, president Dominion Marine association; W. R. Hopkins, city manager, Cleveland; Dickerson N. Hoover, inspector general, steamboat inspection service; Colonel Lamb of Toronto, Lieut. Cols. G. B. Pillsbury and E. J. Dent; Harvey D. Goulder, Prof. Herbert C. Sadler, Isaac B. De Young, general superintendent St. Mary's Falls canal, and others.

Wind Affects Power and Speed

Wind Resistance Estimated for Three Vessels—A 10-Knot Freighter—A 20-Knot Passenger Liner—And a 20-Knot Cross Channel Steamer

BY HUGH J. R. BILES, Esq., B. Sc.

THIS paper is an investigation of the effect of wind pressure on the horsepower and speed of different types of ships. The paper deals with effect of the wind pressure in increasing the resistance to motion, and also considers the extra resistance of the rudder when a large degree of helm angle has to be carried to counteract a wind on the bow or quarter. No attempt is made to consider the effect on resistance of rough water resulting from wind.

The procedure adopted has been to assume in each case the wind acting directly ahead and to assume that the resulting pressure on the vessel can be expressed in the form $K A V^2$ where K is a constant, A is an area, and V is the speed of the vessel relatively to the wind. The value of the constant K adopted throughout has been 0.0043, and the areas have been measured in square feet, velocities in knots, and the resulting pressure in pounds. As a first approximation to the pressure on the superstructure it is usual to measure the transverse thwartship area of the vessel above the water line and use this for A in the formula above, it being assumed that the frictional air resistance is negligible. The constant K covers not only the pressure on the forward side of the surface but also covers the effect of the rear suction on the surface exposed to the wind. The assumption that the whole of the thwartship area above the water line is exposed to a head pressure, similar to that on a plane advancing at right angles to the wind, is obviously not correct, for the portion of the vessel between the waterline and the weather deck is of easy form, and it is obvious that the resistance of this portion of the above-water structure is usually almost entirely frictional, and is very small in comparison with the head resistance of a plane whose area is the same as the midship area of the vessel between the waterline and the weather deck. On the other hand, when there is discontinuity in the superstructures, and a fair distance between these discontinuous portions, the wind will exert its full force not only on the foremost superstructure but on the ones abaft it which seem to be masked by the leading superstructure. Moreover, if the wind be a few degrees on the bow, then it will exert some effect on discontinuous superstructures however close together they may be.

Paper read at the spring meeting of the sixty-eighth session of the Institution of Naval Architects, at London, April 8, 1927. The author is an associate member.

The resistance due to air pressure has been estimated for three vessels: one a 10-knot 400-foot cargo vessel of about 8000 tons deadweight, of the poop, long bridge and forecastle type; the second a 20-knot passenger liner of about 650-foot length; and the third a 20-knot cross-Channel steamer of about 320-feet length. Before giving the results of these estimates of wind pressure it will be as well to outline how the calculation has been made.

(1) Cargo Steamer—The forecastle has been taken as having a rear suction effect only and no pressure effect. This is accounted for by taking half the area of the after end of the forecastle instead of the whole area. The bridge space has been taken as having the full pressure and suction effect. In the case of the poop, the area of the fore-end of the poop has been multiplied by three-fourths to represent full pressure on the front of the poop, and a suction effect on the after and of the poop equal to half houses on the bridge deck in any way that of a flat surface. None of the mask each other, and they have been taken in a straightforward way. The funnel effect has been taken as equal to half that of a rectangular-shaped funnel. Frictional resistance was also estimated and found to be about 3 per cent of the head resistance, and an addition of 2 per cent was also allowed for fittings, viz. deck machinery, ventilators, rigging, rails, boats, skylights, etc., and 2 per cent allowed for air eddies round the counter of the vessel.

(2) Passenger Line—A similar procedure has been adopted in this case, the only difference in the results being that as most of the superstructures and houses were continous, or with very small gaps, between them, the forward superstructures were in general the only ones that were reckoned as acted upon by the full force of the wind. The funnels were treated in exactly the same way as the cargo vessel, except that there was a sufficient interval between the funnels to allow the full pressure acting on all of them. In this case the frictional air resistance was found to be about 4 per cent of the remainder. Eddies round the stern were estimated at 2½ per cent and deck fittings at 2½ per cent.

(3) Cross-Channel Steamer—The method of estimating was similar to the two previous cases. The frictional resistance in this case was estimated to be 3¾ per cent of the total, but owing to a very square stern the estimate for the stern eddies resulted in an addition of 6¾ per cent to the total. Two and a half per cent was again added for the resistance of fittings, etc.

In Tables I, II, and III are given for the three vessels the estimated resistance in pounds due to wind pressure corresponding to various relative speeds of wind and vessel. In addition, a column is given which shows the percentage that this air resistance bears to the naked resistance at load draft of the ship, at 10 knots in the case of the cargo vessel and at 20 knots in the cases

TABLE I

Air Resistance Due to Wind of Velocity V Relatively to Ship

(1) Cargo Vessel

V, Knots	Resistance, Lb.	Per cent Air Resistance naked resistance at 10 knots
5	207	0.8
10	829	3.1
15	1,870	7.0
20	3,315	12.3
25	5,180	19.25
30	7,450	27.7
35	10,150	37.7
40	13,260	49.3
50	20,700	77.0
60	29,900	111.0

of the two other vessels. As an example, it will be seen from Table I that if there is a 20-knot head wind blowing then the relative speed of ship to wind will be 30 knots; the resistance in pounds will be 7450 pounds, and the percentage of this to the naked resistance of the cargo vessel at 10 knots will be 27.7.

It will be noticed that the effect of wind is to increase the total resistance of the ship by a greater percentage in the case of the cargo vessel than in either of the other two cases. This is principally due to the fact that the resistance of the cargo vessel is small compared to the surface exposed to the wind. For instance, the thwartship area above the load water-line of the cargo vessel in case (1) is 1685 square feet as against 5270 square feet in the case of the liner, and 2100 square feet in the case of the cross-Channel steamer. The corresponding resistances are: 27,000 pounds for the cargo vessel at 10-knots; 189,000 pounds for the liner, and 45,000 pounds for the cross-Channel steamer at 20 knots. Moreover the superstructures in the liner and cross-Channel steamer mask each other much better than in the case of the cargo vessel.

TABLE II

Air Resistance Due to Wind of Velocity V Relatively to Ship

(2) Liner

V, Knots	Resistance, Lb.	Per cent Air Resistance: Naked Resistance at 20 knots
5	385	0.2
10	1,540	0.8
15	3,460	1.8
20	6,170	3.25
25	9,640	5.1
30	13,870	7.3
35	18,900	10.0
40	24,700	13.1
50	38,550	20.4
60	55,500	29.4
70	75,600	40.0

If the wind is on the bow it is not uncommon for quite large angles of helm to be required to keep the vessel on her course. The following estimates have been made from the results of model experiments on rudders, and the estimates give the added resistance due to helm angles of 10 degrees and 15 degrees. The figures are based principally on Messrs. Baker and Bottomley's papers on rudders behind single-screw and twin-screw vessels, and on Mr. Denny's paper on spade rudders.

In the case of the cargo vessel, the formula used in calculating the normal pressure on the rudder is the one given by Mr. Bottomley in the paper he read this year before the Institution of Engineers and Shipbuilders in Scotland. This is:—

$$P \text{ normal} = K A^{1.04} V^{1.85}$$

at 10 degrees $K = 0.55$

15 degrees $K = 0.78$

From this formula the pressure on the rudder of this vessel with 10 degrees of helm would represent an increase of 4.35 per cent to the naked resistance at 10 knots, and with 15 degrees helm an increase of 9.35 per cent. The ratio of area of rudder for this ship to length multiplied by draft is as 1:70.

In the case of the liner the rudder pressures were calculated from the results of Mr. Bottomley's 1924 paper to the Institution of Engineers and Shipbuilders in Scotland. These are for a vessel of 0.76 prismatic co-efficient, and it is probable that the actual pressures for this liner would be higher as she was a good deal finer than Mr. Bottomley's form. One of Mr. Bottomley's future papers will probably clear this up. The calculated results show that at 10 degrees helm the naked resistance at 20 knots is increased by 1.6 per cent and at 15 degrees by 3.7 per cent.

In the case of the cross-Channel steamer the estimates of rudder resistance were made from Mr. Maurice Denny's paper on Spade Rudders (Trans. I. N. A., 1920). At 10 degrees helm the resistance is increased by 2 per cent and at 15 degrees by 3 per cent.

It will be seen, then, that the increase of resistance due to direct wind effect and rudder is most serious in the case of the cargo vessel.

It is not always realized to what an extent a wind can upset measured-mile trial results. An example may best illustrate this. Referring to Table I, which gives the wind pressure results for the cargo vessel, it will be seen that if the vessel meets a 20-knot wind when she is herself doing 10-knots, the resistance due to a relative wind speed of 30 knots will be increased by 27.7 per cent. On the return run the relative wind speed will be 10 knots following, and the resistance will be decreased by 3.1 per cent. That is to say, that for a pair of runs at 10 knots each way the mean increase of resistance due to wind pressure will be

$$\frac{27.7 - 3.1}{2} = 12.3 \text{ per cent.}$$

It will be seen from Table I that if there had been no wind on the mile the increase of resistance at 10 knots would have been only 3.1 per cent, a difference of 9.2 per cent. That is to say, that if this cargo vessel were run on the mile on a day when there was a 20-knot wind blowing down the mile, the mean resistance and horsepower for a pair of runs would be 9.2 per cent higher, due to a greater wind pressure than on a calm day. As the wind speed rises so this percentage will rise.

If the wind is not directly down the mile, but is in such a direction that on one run it is a little on the bow, it will have the effect of increasing the wind pressure resistance, due to the additional resistance of parts of the superstructure previously masked by the wind. In addition a certain amount of helm will be required to counteract the tendency of the wind to turn the vessel off her course. It was shown above that with a helm angle of 10 degrees the resisance of the cargo vessel was increased by

TABLE III

Air Resistance Due to Wind of Velocity V Relatively to Ship

(3) Cross-Channel Steamer

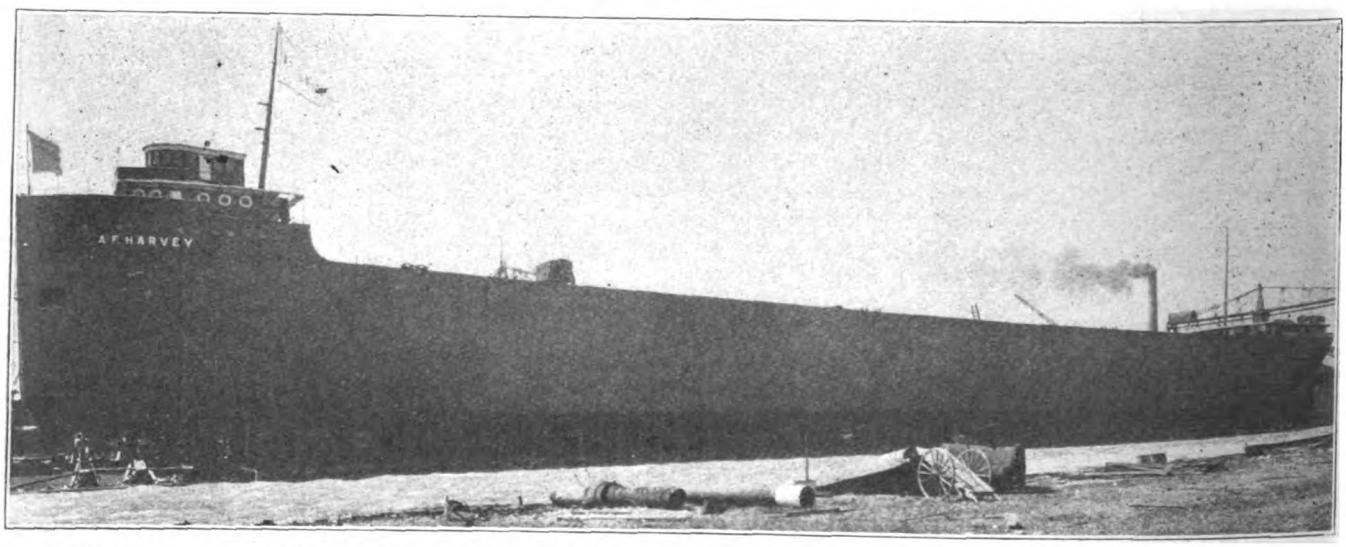
V, Knots	Resistance, Lb.	Per cent Air Resistance: Naked Resistance at 20 knots
5	114	0.25
10	455	1.0
15	1,024	2.3
20	1,820	4.1
25	2,840	6.35
30	4,090	9.15
35	5,575	12.5
40	7,280	16.3
50	11,380	25.4
60	16,380	36.6

4.35 per cent due to extra rudder resistance. It is not unknown for this degree of helm to have to be carried to counteract the wind effect, so that it will be seen that for a cargo ship under fairly normal trial trip conditions the mean resistance and power for a pair or runs may be increased by 9.2 per cent, due to wind pressure plus 4.35 per cent due to helm. On a bad day it is even worse.

Measured-mile trials have two main purposes; one is to satisfy the owner that he has got what he is paying for, and the other is to give the shipbuilder data on which he can make future estimates and designs. Margins of power have always to be provided to balance the fact that service conditions are always worse than trial ones, and no analysis of trial results will reduce the fact that from 20 per cent or 25 per cent margin over the trial power is required for service conditions.

Analysis of trial results is very necessary to check estimates of power and speed, to balance up theory with practice, and to compare performances of one form and propeller against others. This is the justification for suggesting that shipbuilders might take on the extra work on trial trips of noting wind velocities and directions, and helm angles, and estimating how much power they have thus lost. This will assist in the comparison of performances on a fine weather basis, which is the only practicable one.

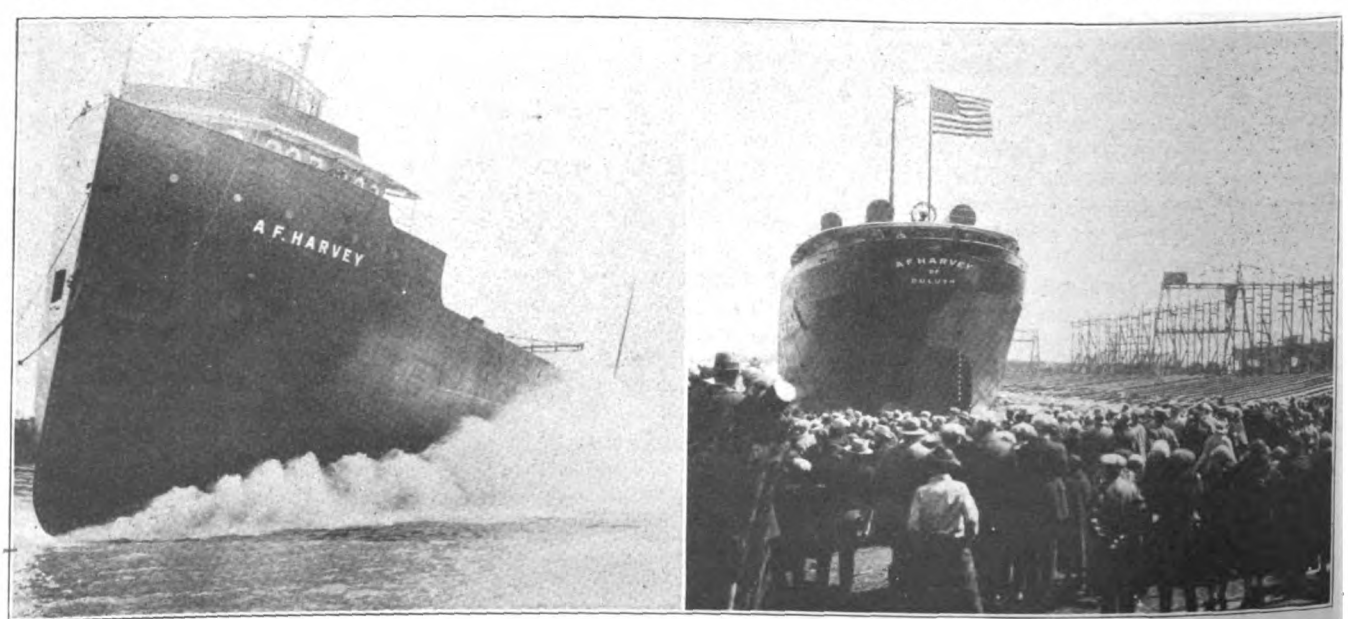
A. F. Harvey Launched at Great Lakes



New Pittsburgh Steamship Co. bulk freighter just before launching at Great Lakes Engineering Works, Detroit, April 9, 1927

THE A. F. HARVEY, one of the two bulk freighters now under construction for the Pittsburgh Steamship Co., Cleveland, was launched at the plant of her builder, the Great Lakes Engineering Works, on April 9. This modern freighter is named for A. F. Harvey, manager of the Pittsburgh Steamship Co. which is by far the largest fleet on the Great Lakes comprising approximately 100 vessels of all types. The launching was entirely successful in every respect and was attended by a group of prominent Great Lakes vessel men. Sarah Harvey, niece of Mr. Harvey, was the sponsor.

The new vessel is quite similar to the AUGUST ZIESING and will enter service after completion about May 15. The length overall is 604 feet;



AT LEFT—HUGE WAVE IS THROWN AS THE BIG FREIGHTER PIVOTS INTO BASIN—AT RIGHT—AFLOAT AFTER LAUNCH

length between perpendiculars 580 feet; breadth molded, 60 feet; depth molded, 32 feet. On a draft of 20 feet the displacement in fresh water is 18,911 short tons. Her gross tonnage will be about 7800 and the net about 6300. Cargo capacity in long tons will be about 12,000 and she has 600,000 cubic feet of cargo space. The bunker fuel capacity is 500 tons.

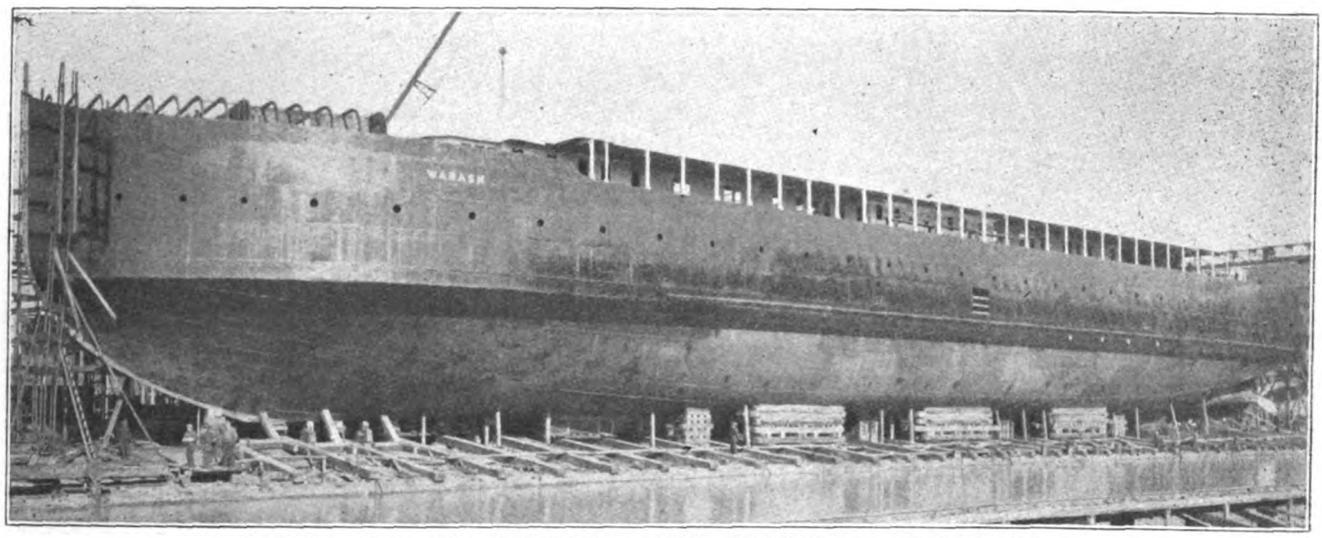
The main engine is a triple expansion steam engine of 24½ x 40 x 65 inches by 42 inches stroke. Three boilers of scotch type 14 feet in diameter by 11 feet 6 inches long will furnish steam at 190 pounds pressure per square inch. The boilers are fitted for hand fired coal burning and were built by Manitowoc.

Of the auxiliary equipment the windlass, winches and steering engine are made by Hyde Windlass Co. The pumps are furnished by Dean Bros. and the refrigerating machinery by the Phoenix Ice Machine Co. The electric generators have American Blower Co. engines and the Crocker Wheeler generators.

The hatches are 12 feet in the opening fore and aft and are spaced 24 feet between centers. There are eight bulkheads consisting of the following: collision, blindhold, two screen, afterhold, coal bunker, engine room, and after peak bulkhead. Hatch covers are of the sliding plate Great Lakes Engineering Works type and are operated by wire lines and engines.

Captains and owners quarters are located in the texas. The dining room and chief engineer's rooms are in the after house. All of these spaces are to be paneled in oak. The vessel is classed in Lloyds Register of Shipping to highest rating for the type.

Launch Wabash Carferry at Toledo



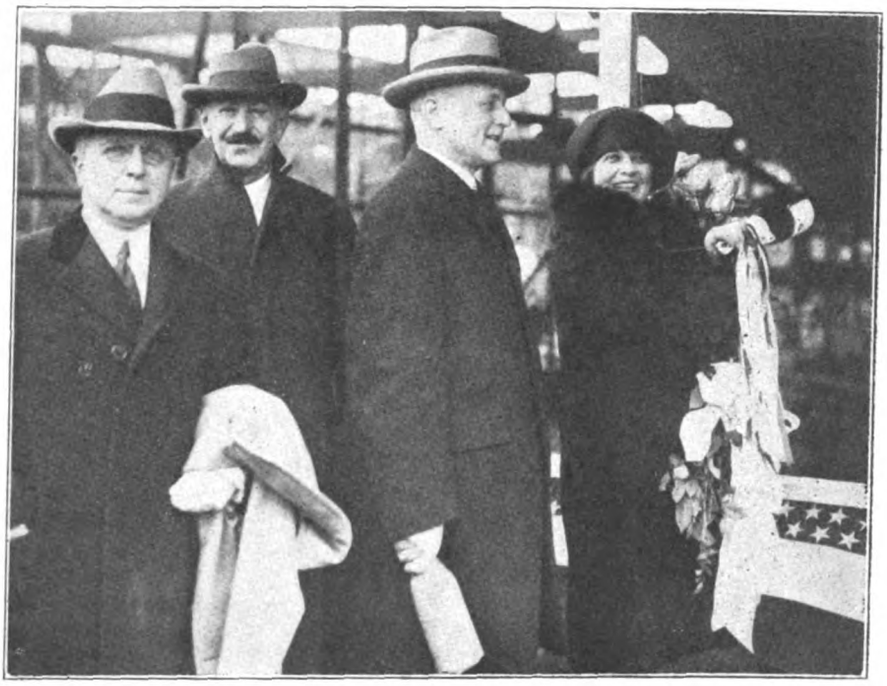
Carferry WABASH *ready for launching at Toledo Shipbuilding Co. March* 19, 1927

ON MARCH 19 the carferry WABASH, largest carferry so far constructed on the Great Lakes, was launched at the yard of the Toledo Shipbuilding Co. Inc., Toledo, O. Many men prominent in railroad and industrial circles attended the launching.

This carferry, at an approximate cost of $900,000 is under construction for the Wabash & Ann Arbor railroads. She is the sixth in the fleet of Ann Arbor carferries operating between Frankfort, Mich., and Menominee, Mich., Manistique, Mich., Manitowoc, Wis., and Kewuanee, Wis.

The general dimensions of the WABASH are; length overall 380 feet; length between perpendiculars 368 feet; beam molded, 57 feet 6 inches; depth to main deck, 21 feet 6 inches; draft 16 feet. Speed loaded will be 13½ statute miles per hour.

Propulsion machinery consists of two vertical triple expansion, direct acting jet condensing steam engines with cylinders 20½ x 34 x 56 inches by 36-inch stroke. Steam will be furnished by four scotch cylindrical



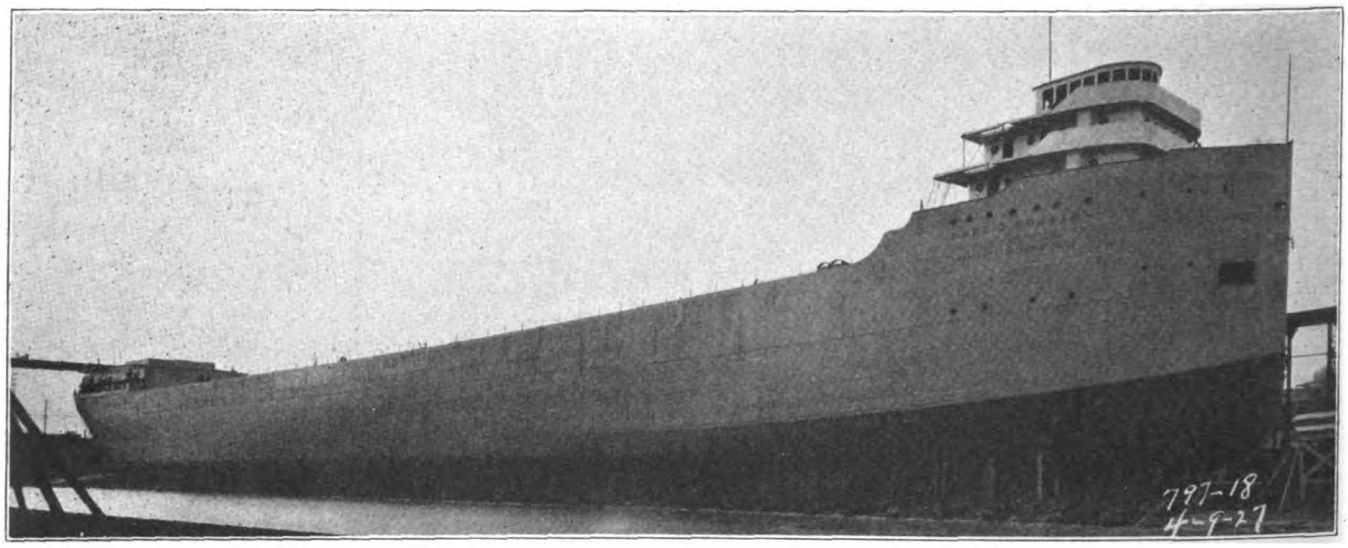
LAUNCHING PARTY AT CHRISTENING OF THE NEW CARFERRY WABASH—LEFT TO RIGHT, JOHN N. WILLIS, J. E. TAUSSIG, PRESIDENT WABASH RAILROAD, A. D. BLACK, TOLEDO SHIPBUILDING CO., MRS. EDWARD H. TAUSSIG, SPONSOR

boilers 14 feet 6 inches inside diameter and 12 feet long over the heads. The working pressure will be 185 pounds per square inch. Each boiler is fitted with three Morrison corrugated furnaces of 42 inches inside diameter and with 430-2½-inch seamless steel tubes.

The hull is built of steel with two complete decks, the main deck having tracks for carrying cars. Steel deck houses are fitted on the second or shade deck for the accommodation of crew and passengers. There is sufficient length of car tracks to accommodate thirty 42-foot railroad cars. Seven watertight bulkheads divide the lower hold space into eight compartments. The boilers and engines are located midship.

The sponsor was Mrs. Edward T. Taussig of Houston, Tex., daughter-in-law of J. E. Taussig, president of both the Wabash and the Ann Arbor railroads. The WABASH was launched in the customary side manner used on the Great Lakes. Six heavy cables held the vessel just before the launching. As the signal was given at the moment when the the bottle crashed against the bow, an electrical switch released six guillotines which cut the six cables.

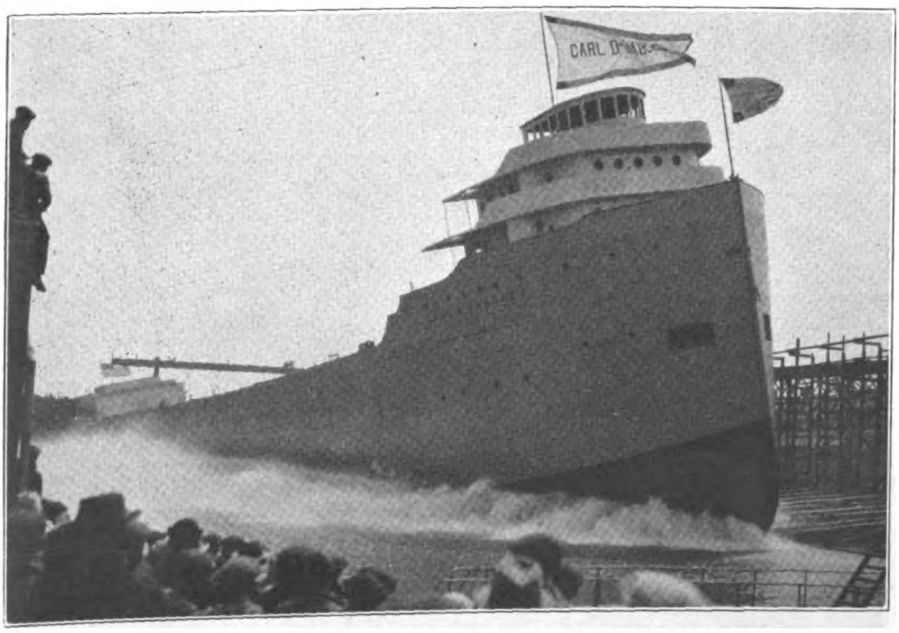
Launch Self-Unloader Carl D. Bradley



Self-unloading Steamer CARL D. BRADLEY *before launching at the American Ship Building Co., Lorain O., April 9, 1927*

ON APRIL 9, there was launched at the American Ship Building Co.'s yard at Lorain, O., the longest vessel ever built on the Great Lakes, the CARL D. BRADLEY. This ship has the further distinction of being fitted with turbine electric machinery. In this respect she is the second vessel so fitted on the Great Lakes, the first being the T. W. ROBINSON, also owned by the Bradley Transportation Co. and similar in general features to the present boat.

The vessel was successfully launched on a beautiful clear day and christened by Mrs. Carl D. Bradley in honor of her husband who as president of the Bradley Transportation Co. had the vision and the courage to go far ahead of his time in the construction of these boats.



CARL D. BRADLEY, LAUNCHED AT LORAIN, O., APRIL 9, 1927

The CARL D. BRADLEY is a self-unloader and will be used in the limestone carrying trade between Rogers City, Mich., and ports on Lake Erie. The electrical equipment for this vessel including the main power plant is being furnished by the General Electric Co. Electricity for operating the main propulsion motor and auxiliary motors will be furnished by a complete turbine generator power plant normally rated at 4200 shaft horsepower and having a maximum rating of 4800 shaft horsepower. The CARL D. BRADLEY will be of about 9500 gross tons and is 638 feet in length, 65 feet in width, and 33 feet deep. Steam is furnished by two Babcock & Wilcox water-tube boilers fitted with Westinghouse automatic stokers and with induced and forced draft. There is a single electric motor driving a single propeller.

After the launching which took place shortly before noon the large company of guests returned to Cleveland and attended a luncheon at the

Hollenden hotel. Mr. Bradley spoke of the early beginnings of the stone trade only 12 or 13 years ago. He outlined briefly the progress which has taken place in the development of the self-unloader boat up to the present as represented in this latest vessel. After the luncheon moving pictures were shown of the launching and of the events immediately preceding and after.

Mr. Bradley deserves great credit for the progressiveness he has shown in the development of the self-unloading Great Lakes stone carrier. There were times no doubt when opinion was set against the possibility of using this type of drive. The successful performance of the first vessel so fitted, fully proved the correctness of his judgment and made his conviction all the stronger that for his type of vessel the kind of power plant chosen will best serve the purpose.

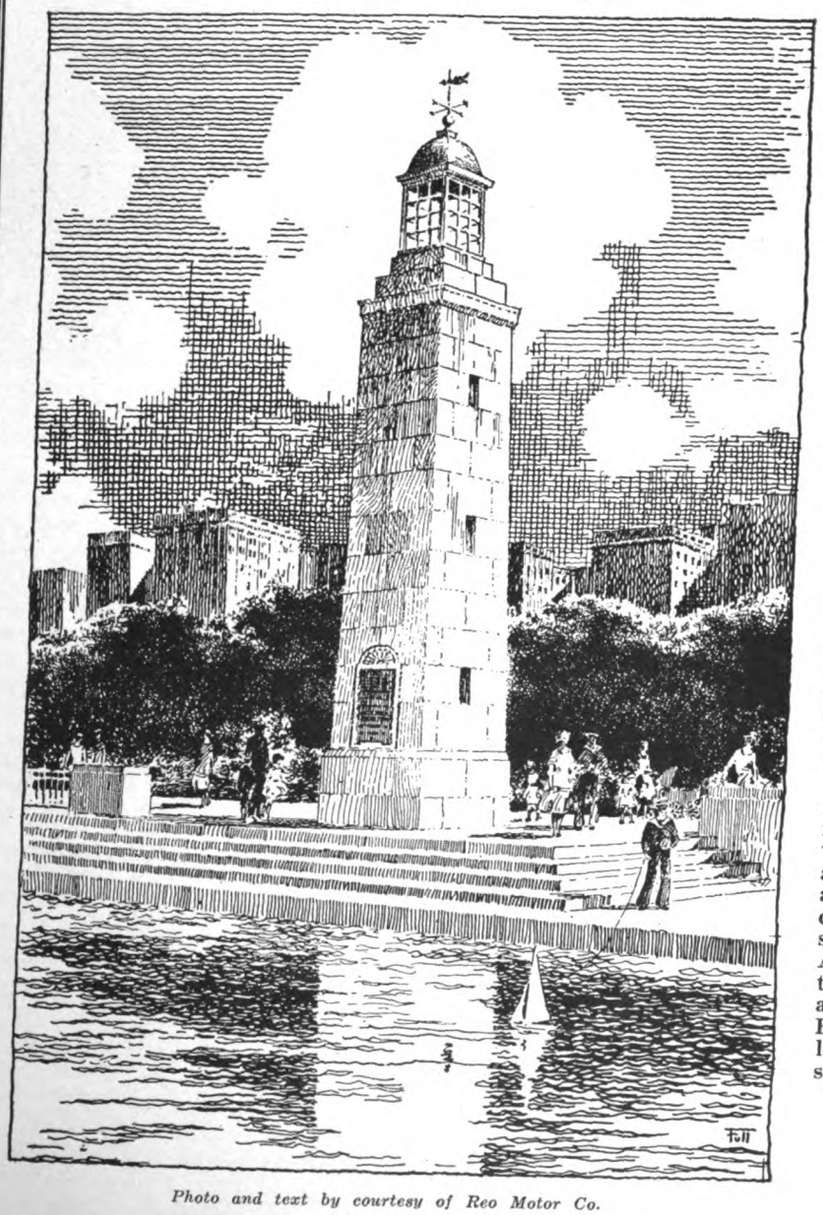
Director of Operations

Appointment of E. A. Kelly, vice president in charge of operations for the Clyde line, to be director of operations of the Merchant Fleet Corp., in place of James A. Wilson, was approved by the shipping board. Mr. Kelly entered upon his new duties April 19.

Mr. Kelly is a native of Kingston, N. Y. All of his business career has been in the shipping business and he has been associated with the Clyde line more than thirty years. He served as secretary to the general manager, chief clerk to the general manager, assistant to the vice president. He was general superintendent of the Clyde line, then general agent of the Clyde and Mallory line. Later he served as general manager, and then became vice president of the Clyde and Mallory lines.

He is widely known in shipping circles and brings with him not only years of practical experience in shipping matters, but the good will and confidence of all with whom he has associated. With his record in responsible positions in shipping Mr. Kelly is well fitted for this position.

Proposed Memorial to Famous Shipbuilder



AN IMPOSING memorial to Donald McKay, famous builder of the clipper ship, Flying Cloud, is planned at East Boston, Mass., by a committee composed of more than three score distinguished Americans. An architect's drawing of the proposed memorial is shown at the left.

The McKay memorial committee includes Franklin D. Roosevelt, Charles Francis Adams, Rear Admiral W. S. Sims, Robert Grant, Guy Lowell, John T. Wheelwright, Benjamin R. C. Low and Roger Griswold. These, and the other committee members, believe that America owes a debt of gratitude to Donald McKay, whose genius and honest craftsmanship once made the United States supreme upon the seas.

Donald McKay, born in 1810, was an unusual combination of artist and scientist, of idealist and practical man of business. His ships were alive to him, and when permitted to name them he chose names which were fitting and beautiful. His masterpiece, Flying Cloud, was the fastest long-distance sailing vessel the world has ever seen.

McKay's supremacy over any other shipbuilder is shown conclusively by records. The sailing vessels of the world made only 22 passages from an Atlantic port to San Francisco, around Cape Horn, in less than 100 days. Of these 22 shortest passages, several were made by McKay ships. And of the seven McKay passages, two of the fastest ever recorded for any sailing vessel were made by the Flying Cloud, which twice made the long trip in 89 days—a record never surpassed by any sailing vessel.

Photo and text by courtesy of Reo Motor Co.

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review

By Harry Bowne Skillman

Attorney at Law

WHERE a collision is due to the negligence of both colliding ships, the damage to each should be equally divided.—ANNA, 297 *Federal Reporter* 182.

* * *

THE court ruled in the WEST HARTLAND case, 297 *Federal Reporter* 330, that in proceedings for limitation of liability for collision damages, the measure of the owner's liability is the value of the vessel immediately after the collision from which he may claim only for money necessarily expended to preserve her from loss or destruction; and where the owner has made extensive repairs since the collision, he may obtain the benefit of such expenditure by surrendering the ship's appraised value immediately after the collision; but if he elects to surrender the ship he cannot assert a prior lien on the proceeds for the cost of such repairs.

* * *

INVOICE value," as used in a bill of lading limiting a shipowner's liability, means the amounts written into the invoices taken as of the time of shipment; the phrase differs from "invoice price" only in the fact that the terms of sale may require discounts from the prices to arrive at present value. Duties cannot be included. When freight is prepaid, it becomes part of the value, but it cannot be regarded as part of the "invoice value."—Anchor Line, Ltd., v. Jackson, 9 F. (2d) 543.

* * *

WHERE a bill of lading is silent as to the place of stowage, the law implies that the contract is for carriage of the goods under deck or in the ordinary carrying space of the ship."—Transatlantic Shipping Co., Inc., v. St. Paul Fire & Marine Insurance Co., 9 F. (2d) 720.

* * *

PROVISION of a steamship ticket sold in Boston for transportation from Montreal to Liverpool, exempting the shipowner from liability for negligence, was contrary to public policy and unenforceable in courts of the United States, notwithstanding further provisions that all questions arising under that paragraph of the contract should be decided according to the English law, under which such exemption clause was valid; an agreement made in the United States contrary to public policy is absolutely void and unenforceable, no matter how solemnly it may be made.—Oceanic Steam Navigation Co. v. Corcoran, 9 F. (2d) 724.

IN THE absence of some agreement to the contrary, a voyage must be commenced without needless delay, and must be prosecuted without unnecessary delay or deviation. The shipowner's agreement is that he will be diligent in transporting the goods to their destination, and that he will do so without unnecessary deviation."—Dietrich v. United States Shipping Board Emergency Fleet Corp., 9 F. (2d) 733.

* * *

PROVISION stamped on bill of lading. "The shippers being satisfied with the stowage and with the conditions of carriage, release ship from all responsibility for deterioration of the said goods," is void, and ineffective to bar a recovery for damage to the cargo.—Skipsea, 9 F. (2d) 887.

* * *

TO ASCERTAIN the proximate cause of a collision, inquiry must be made whether there is an unbroken connection between the act and the injury; that is, whether the negligent act caused the injury. An intervening act is not the proximate cause of the injury, unless it is efficient to break the casual connection. An overtaking vessel, negligent in navigating too close to a vessel ahead in a narrow channel without attempting to pass, it was held in the case of Pleiades, 9 F. (2d) 804, was not liable for a collision when the current suddenly caused the overtaken vessel to sheer, proximately causing the collision. It was said, further, that an overtaking vessel is not bound to anticipate improper navigation by the overtaken vessel, and that the overtaking vessel, not intending to pass the overtaken vessel, is not required to give a signal. The overtaking vessel must bear the consequences of her own injury, if she makes the mistake in assuming a position too close to an overtaken vessel in a narrow channel, resulting in a collision when the overtaken vessel suddenly sheered because of the current.

* * *

WHARFAGE charges for the period when a vessel is receiving and landing passengers, or loading or unloading freight, constitute a maritime lien; but a contract for wharfage of a vessel withdrawn from navigation is not maritime, it was declared in the case of Poznan, 9 F. (2d) 838, and will not support a maritime lien, defined as an appropriation of a ship as a security for a debt or claim; it is given by the law, and it gives the creditor a special property in the ship, which subsists from the moment the debt arises, and it gives him a right to have the ship sold that his debt may be paid out of the proceeds of the sale.

* * *

A PASSENGER, who had a contract for a Mediterranean cruise, was entitled to every precaution for his personal safety, and to respectful treatment from the manager of the excursion and its servants, and to protection from violence and insult, from whatever source arising, it was held in the case of Raymond & Whitcomb Co. v. Ebsary, 9 F. (2d) 889, but damages to such passenger sustained by improper act of cruise manager in prohibiting him from going on a side tour must be confined to pecuniary injury sustained; shock, distress, or humiliation of another does not enter into damages suffered.

* * *

THE negligence of a tug causing collision between tows is not merged in the negligence of the tow's bargemaster in failing to take steps to prevent sinking, so as to preclude recovery of damages attributable to the collision; where a tow slightly damaged by a collision due to a tug's negligence, sunk due to negligence of person in charge in failing to promptly beach or siphon her, only damages due to collision were recoverable.—J. G. ROSE, 9 F. (2d) 917.

* * *

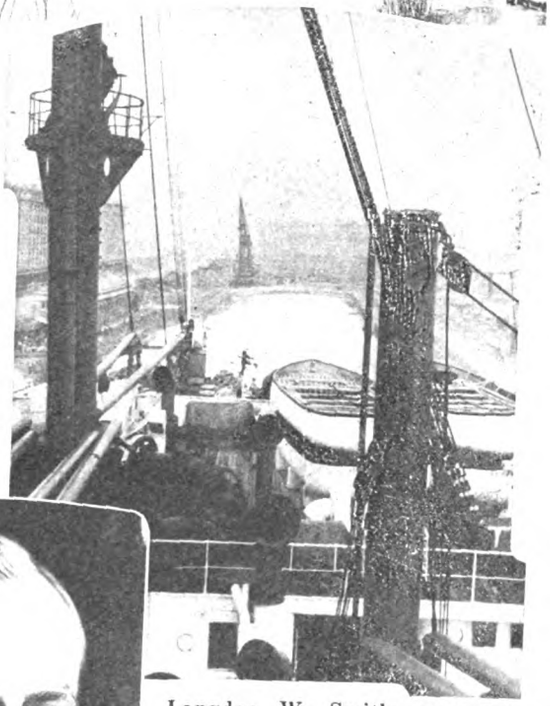
WHILE the right of a master to demote a seaman on voyage, especially in a harbor, in the absence of the approval of the consul of the ship's country, may be questioned, said the court in the case of ROSEMARY, 9 F. (2d) 980, still to do so was reasonable, where the seaman (mate) had been injured.

* * *

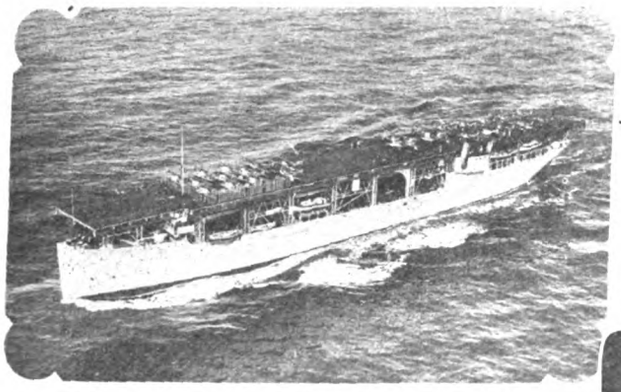
DEVIATION is the highest form of negligence, it was said in Fass v. United States Shipping Board Emergency Fleet Corp., 9 F. (2d) 1004; and in the case of Western Lumber Mfg. Co. v. United States, 9 F. (2d) 1004, the court held that deviation deprives the carrier of all exemptions, statutory or otherwise, and the master's negligent operation of the vessel during deviation does not bring loss within the provisions of the Harter act, relieving owner of liability for errors in navigation. It was further decided that even if an unauthorized deviation without intent to convert goods constitutes conversion, the shipper must manifest an intention to rescind the contract; on no theory may he demand the value of the goods, treating them as the property of the carrier, and at the same time exact damages for a breach of a contract to carry and deliver them.

Latest Marine Events in Pictures

Panoramic view of the plant of the Manitowoc Shipbuilding Corp., Manitowoc, Wis., with a Great Lakes bulk cargo vessel in for repairs



On board S. S. Leviathan looking forward into the Commonwealth dry-dock, Boston



Aircraft carrier Langley cruising off the California coast during naval maneuvers. There are thirty airplanes on the landing deck. Additional planes on other decks and in the hold

Langdon W. Smith, manager of New York Towboat Exchange with 250 towboat owners and operators in New York harbor

Photo by Marceau

Norwegian S. S. Otto Sinding loading 56,000 bushels of barley from Chicago

Daniel McCool, twin screw diesel, self-unloading cement carrier, completed in 1926 by the Manitowoc S. B. Corp. Length over all 152 feet; beam 33 feet

Below—Oil engine electric tug Meitowax, completed March 5, 1927, by the Staten I. S. B. & D. D. Co. for the Long Island railroad.

Above—Plant of the Nashville Bridge Co., Nashville, Tenn. Builders of river craft

Elected President of Fairbanks-Morse Co.

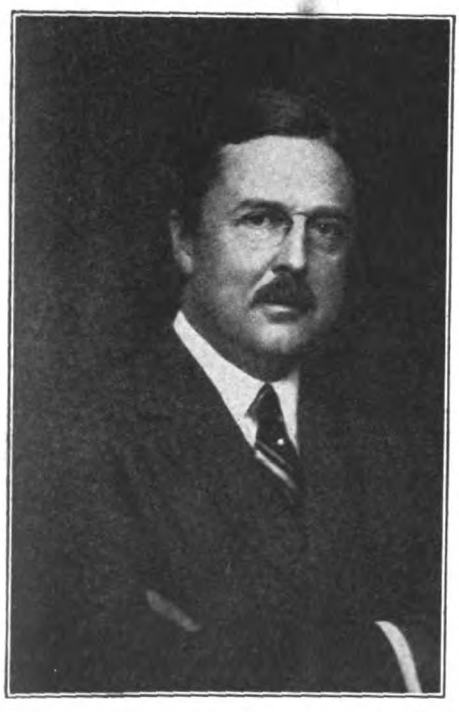
At the annual meeting, March 29, of the directors of Fairbanks, Morse & Co., W. S. Hovey was elected president, the former president, C. H. Morse, becoming chairman of the board. This is the first time this position has been held by a man not of the original Morse family.

Born in 1875, a graduate of Cornell, Mr. Hovey joined the Sheffield Car Co., an affiliation of Fairbanks-Morse, in 1902, as assistant superintendent. Later he became superintendent, which position he held until 1913, when he was transferred to the Beloit works of Fairbanks-Morse as manager of the engine division. A few months later, he became general manager of that plant.

In 1919, Mr. Hovey was elected vice president in charge of all the manufacturing activities of Fairbanks-Morse and in 1924, was made general manager of the entire business. He will remain general manager.

Benjamin Carpenter Dies

Benjamin Carpenter, since 1888 a dealer in general hardware, railroad, mill and contractors supplies died Feb. 23 at his home 1545 Astor street, Chicago, at the age of 61 years, after an illness of more than two years. After graduation from Harvard university in the class of 1888 he entered the company of which he ultimately became president and for many years took a leading part in the civic and commercial life of Chicago. At the time of his death Mr. Carpenter was president of George B. Carpenter & Co. established in 1840 in Chicago as ship chandlers. In the management of the company two brothers succeed Mr. Carpenter. John A. Carpenter, vice president and Hubbard Carpenter, secretary-treasurer, also a son, Benjamin Carpenter Jr., assistant secretary, and a second son, Fairbank Carpenter.



THE LATE BENJAMIN CARPENTER

William Goodman Dies

William Goodman vice president of the Worthington Pump & Machinery Corp., died in New York April 21.

Mr. Goodman was 52 years old and had been prominent in the affairs of the company almost ever since his graduation from Harvard. He had taken special interest in the development of the two-cycle double acting diesel engine, and lived to see its successful installation in two shipping board ocean freighters. Mr. Goodman was a member of the American Society of Mechanical Engineers, the Knickerbocker Golf club of Englewood, Lawyers club of New York and the Union club of Cincinnati. He is survived by his wife and two children.

Made Operating Manager

W. W. Morse, formerly vice president and general manager of the Upper Mississippi Barge Line Co., Minneapolis, has resigned to become operating manager of the new upper Mississippi division of the Inland Waterways Corp., which service will be inaugurated this spring. Mr. Morse also is owner of the Morse Warehouses, Minneapolis, is a director of the Mississippi Valley association, and a past president of the National Warehousemen's association.

Made Marine Engineer

Ira Short, formerly gear engineer of the Engineering department at the South Philadelphia works of the Westinghouse Electric & Mfg. Co., has been recently promoted to the position of marine engineer. Mr. Short was born in Woodville, Michigan in 1890. He was graduated from the North Carolina State college with the degree of bachelor of science in mechanical engineering, and in 1911 entered the apprenticeship course of the Westinghouse Electric & Mfg. Co., at East Pittsburgh.

In 1912 Mr. Short was transferred to the condenser engineering department, specializing on condensing apparatus as applied to marine installations. He remained in this work until 1917 when he was transferred to the marine engineering department. He continued in marine engineering work until 1923 at which time he was promoted to the position of gear engineer, continuing in this capacity until his recent appointment as marine engineer.

IRA SHORT

During his work with the Westinghouse company Mr. Short assisted in designing propulsion equipment for a number of United States navy destroyers and merchant vessels.

Proposed Diesel or Oil-Electric Ferry

THERE is shown in accompanying illustrations an outboard and inboard profile of the double ended steel ferry vessel GENERAL CHARLES F. HUMPHREY for service of the war department in New York harbor to Governors Island. This is the second design for this vessel as the bids submitted on the original design Dec. 10, 1926 represented a range of prices beyond the congressional appropriation for the construction of the vessel. New specifications have therefore, been issued on which bids will be taken, May 2, 1927.

Under the new specifications the general dimensions of the vessel are: length over guards 128 feet; length on 9½ foot water line, 118 feet; breadth over guards, 44 feet; breadth of hull on 9½ foot water line, 34 feet; depth of hull at side, molded, 14 feet 6 inches; depth of hull at center, amidships 15 feet 2 inches; draft in light service condition above base, 8 feet 6 inches.

The hull of this vessel is laid out with as straight line cross section as possible in order to simplify construction and reduce cost. The extension of the deck over the hull is carried by flaring out the sheer strake to reach the guards. Avoidance of hull brackets was considered necessary on account of the floating driftwood and timbers which would tend to bend and loosen them. The flare is attained by flanging the interior bracket plates to take the flared hull sheer strake plates.

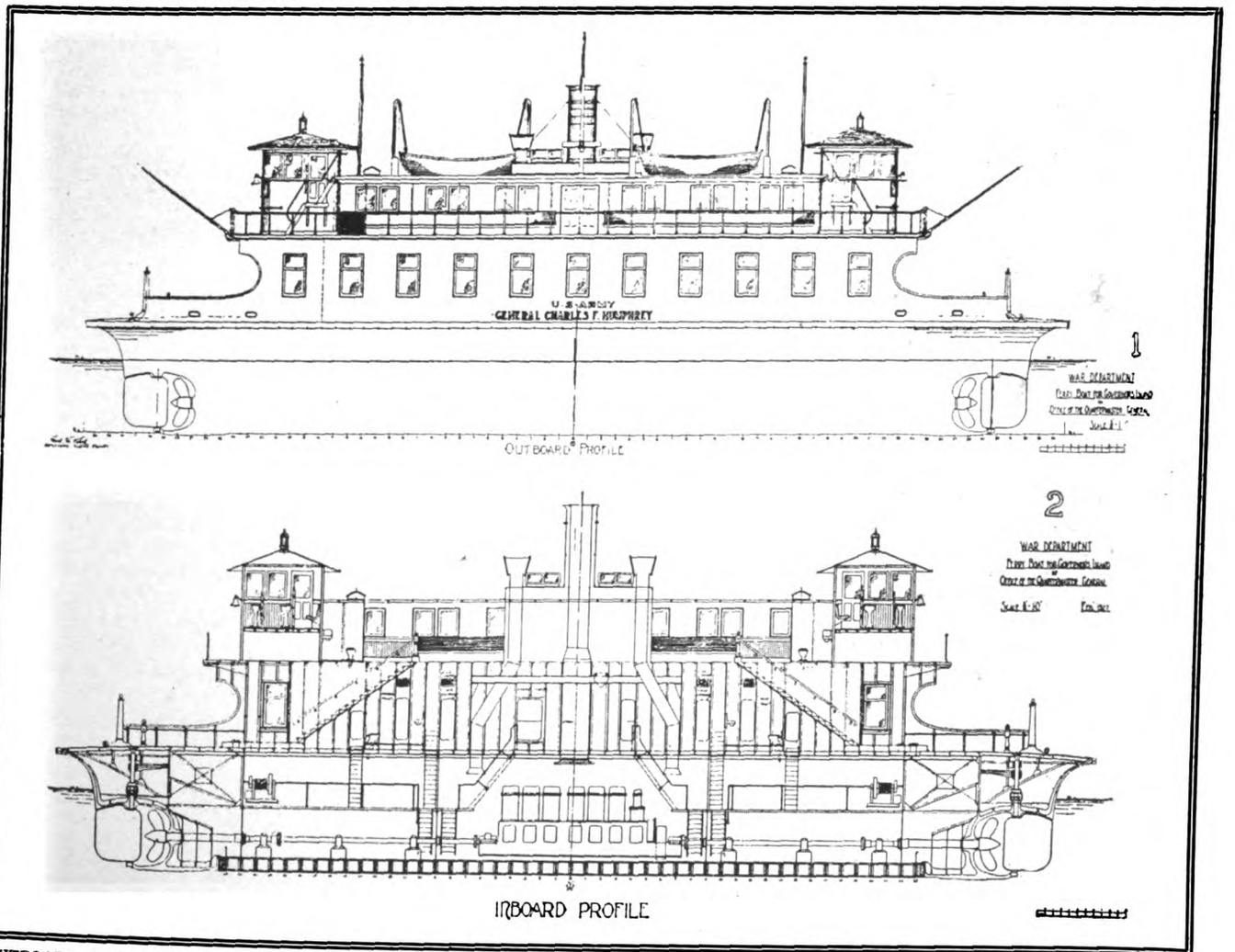
A keel of the flat plate type 44 inches wide of 23-pound plate is required for 3/5 of its length increasing to 25.5-pound plate at the ends. The center keelson will consist of a 20-inch steel I-beam of 65 pounds weight per linear foot, and with flange width of 6¼ inches. There will be two stem-stern frames, one at each end of the vessel of open-hearth cast steel. The rudders are to be of the balanced and lower pintle type each of extra large size and made of cast steel. The hull plating will vary in weight from 15.3 pounds to 20.4 pounds. The following watertight bulkheads will be fitted; two, one at each peak and two others, each one forming the inboard ends of store room or hold compartments.

Diesel or Diesel-Electric Machinery

This vessel is to have a single or double acting, two or four cycle, solid or air injection, marine diesel engine of four five, six, or eight cylinders to give about 400 shaft horsepower at normal propeller revolutions. The engine must deliver the required horsepower on standard commercial grade of fuel oil. In the design of the engine the thrust bearings at one end shall be arranged as part of the engine foundation or rigidly attached thereto. The engine must be capable of direct mechanical control from the pilot house.

An alternative machinery proposal calls for diesel electric drive. In this case two engines, each driving electric generators are called for. The current so generated may be supplied to one electric motor direct connected to a fore and aft continuous shaft or it may be supplied to two electric motors each connected to its own propeller shaft independent one of the other. Under this proposal each diesel engine must deliver 250 brake horsepower. Where the single motor proposal is made the motor must be of approximately 375 horsepower at 180 to 200 revolutions per minute and 500 volts. Where the proposal calls for two motors each motor will be rated at 375 horsepower at 180 revolutions per minute at 500 volts. Pilot house control is required in either case.

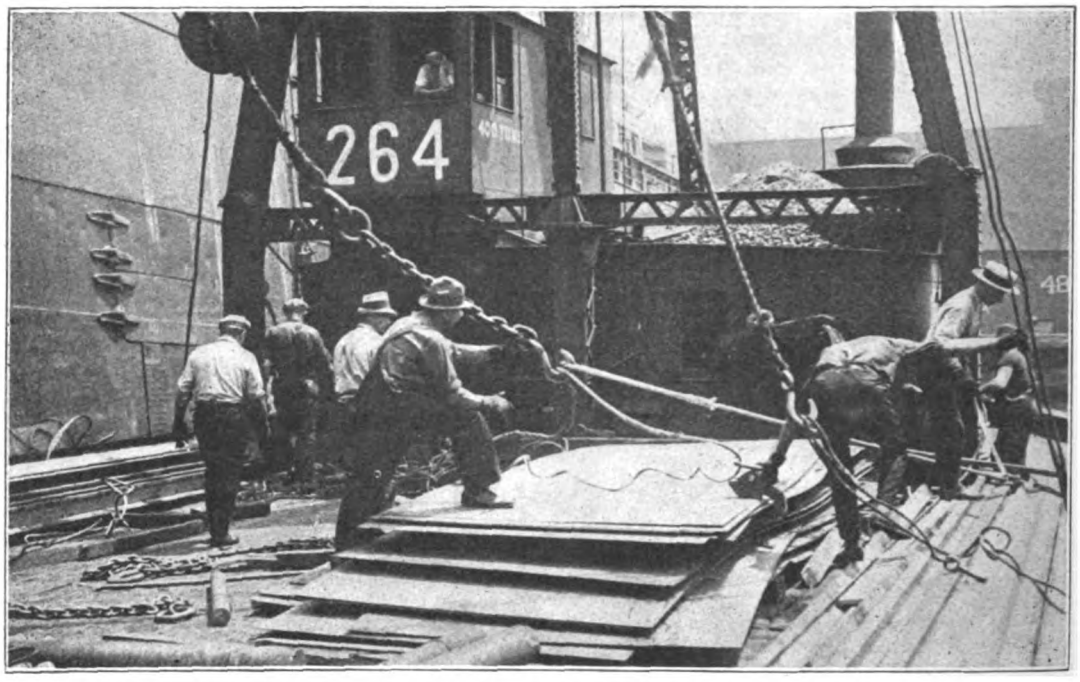
The proposals for the construction of this ferry is to be opened at the office of the corps-area quartermaster, second corps-area Governors Island, New York harbor May 2, 1927. The department will supervise the work.



OUTBOARD AND INBOARD PROFILES OF THE PROPOSED DIESEL OR DIESEL ELECTRIC FERRY FOR THE ARMY AT NEW YORK HARBOR—BIDS OPENED MAY 2, 1927

Dock Management Progress Section

How Successful Dock Operators Have Met Problems of Giving Best Service to Ships



Loading Steel on Southern Pacific Freighter

Reduce Accidents on Piers By Common-Sense Methods

BY A. MARK SMITH

YOU are bound to have about so many accidents, no matter what you do. Accidents have to happen every so often." These words express an attitude toward systematic efforts to reduce accidents which has been expressed time and time again. There has been a tendency in each basic industry to believe that their industry is "different"; that safety educational work "may be all right for some industries, but it can't get very far in ours." This attitude has been particularly persistent in the shipping industry, due, perhaps, to the conditions perculiar to that in dustry. A ship is delayed and arrives in port a day late, and its sailing date is only a day or two away. This means that the cargo must be discharged and the new cargo loaded is "double time order." The very nature of the work is such that every man must depend upon his own carefulness for the prevention of accidents.

Photos by Underwood & Underwood

The workers themselves come and go, drift from one pier to another, and it is common knowledge that longshoremen are floaters. This condition has made organized safety work look practically impossible to executives in the shipping industry.

Safety Increases Efficiency

As a matter of fact, there has been a reluctance to engage upon any very comprehensive program of accident reduction on the piers, because it was felt that nothing of any importance in the way of results could be accomplished, and that therefore it would be better not to start a project that could not be carried to a successful conclusion. It was felt that any attempt to install an accident reduction program on the docks would cut down the efficiency of the crews, and that less tonnage would be handled if the dangers of the job were emphasized in the minds of the men. If a ship had to be discharged under the pressure of making ready to sail at a certain date, there was a conviction on the part of the dock superintendents that it would be inconsistent to ask longshoremen to "make it snappy" and at the same time caution them to be careful.

In the face of these apparently insurmountable obstacles, certain executives of the Southern Pacific Steamship lines who were doing some advanced thinking about accident reduction, became convinced that systematic safety educational work could prevent accidents in marine work just as effectively as has been done in a number of other basic industries where "insurmountable obstacles" had

at one time loomed just as insurmountable. Accordingly. in March, 1926, a start was made. It must be admitted that the begining was undertaken not without some misgivings on the part of a number of the officers of these lines, but it was determined that a trial should be made in spite of misgivings to the contrary.

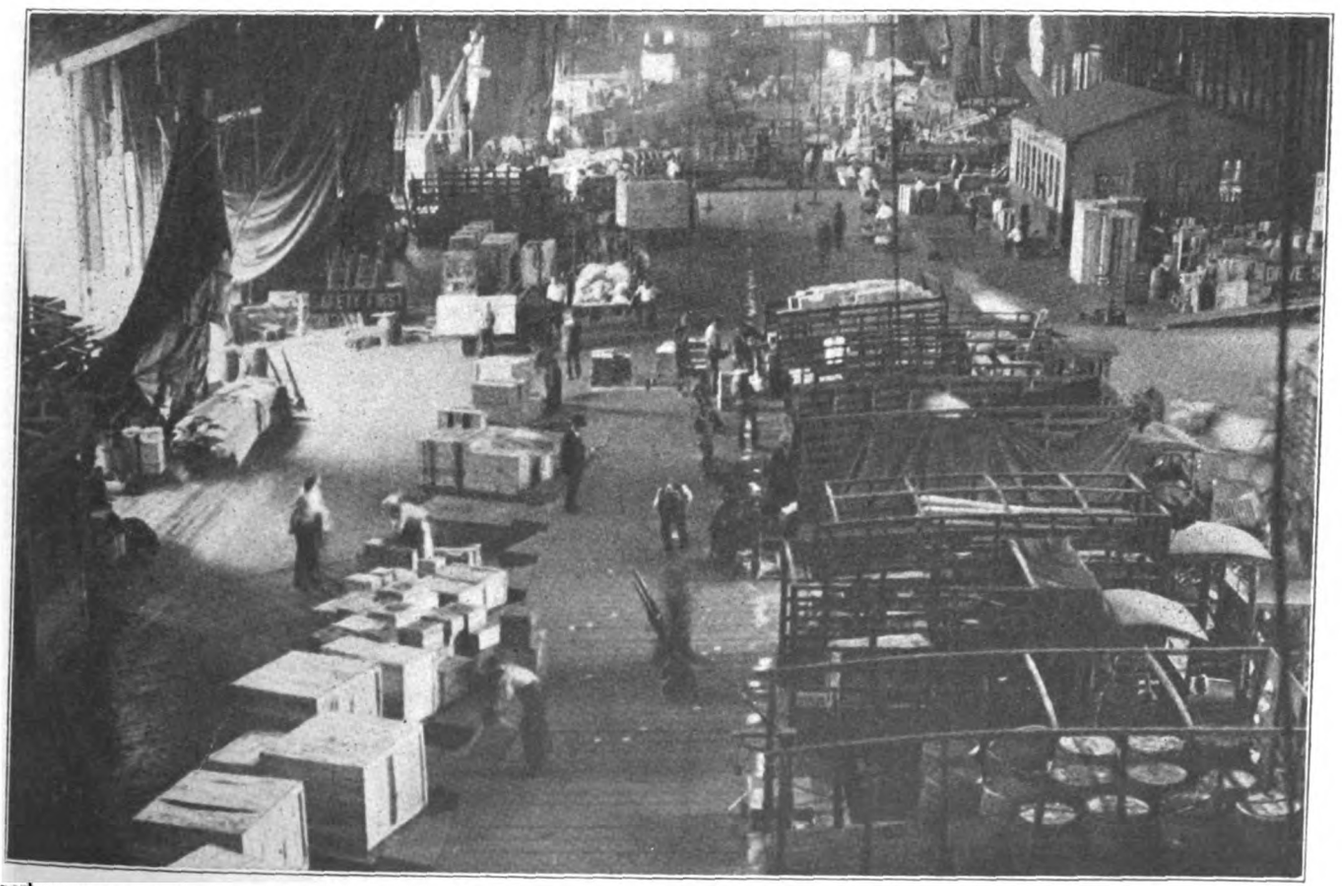
A careful survey was carried out and upon the basis of this survey two definite conclusions were reached. First, that a plan should be developed to secure and maintain the interest and cooperation of the foremen and superintendents of the piers. Second, that a plan of systematic safety advertisement and education should be undertaken.

In the accomplishment of these two objectives, a practical and comprehensive safety education program was mapped out and put into effect. The first action taken, was the calling of a meeting of the foremen and operating executives. The manager presided in person at this meeting, and outlined the program which the company had in mind, established definitely the fact that the company was back of this safety movement, and called upon all foremen and operating executives for their suggestion, ideas, and cooperation in making the safety program effective.

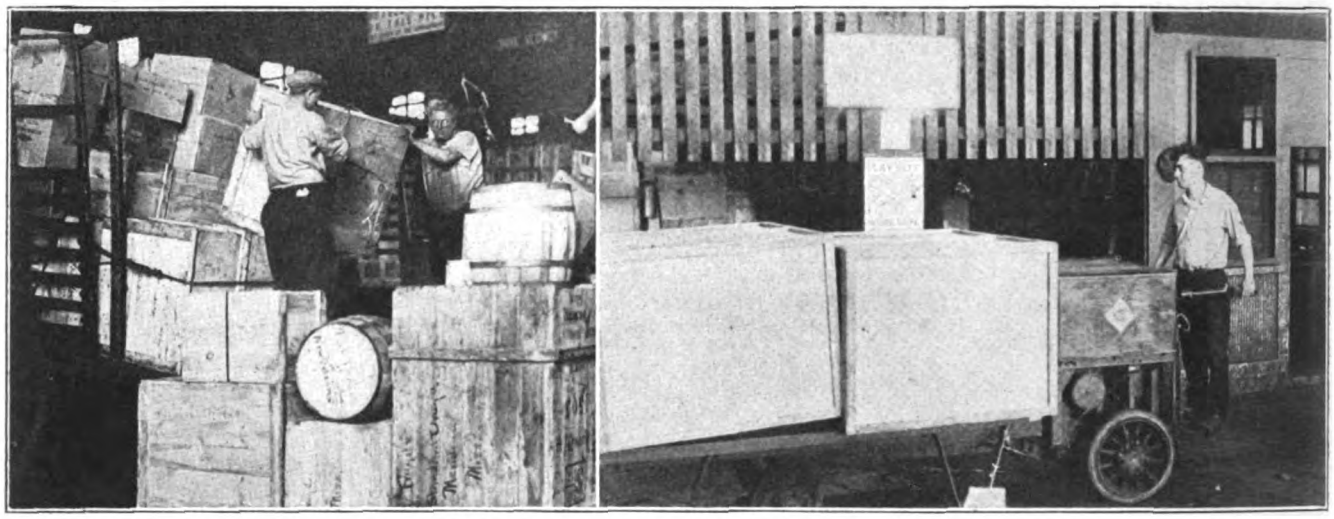
In all successful industrial safety work it has been found extremely advantageous to set up certain simple machinery by means of which "the safety ball is kept rolling." Recognizing the wisdom of this fundamental principle, the Southern Pacific Steamship lines organized the foremen into what is called the general safety committee. All foremen and pier supervisors automatically became members of the general safety committeee. Once a month this committee meets in the dining salon of one of the company's ships, where the manager presides, and safety suggestions are submitted and discussed. After the lunch served by the ship's dining service, the brief business meeting is held. One of the striking features of this meeting which is certain to impress a visitor is the pith and brevity with which the meetings are conducted. None of them are allowed to die a natural death of exhaustion. Ideas are presented briefly, and no "long winded" discussions are indulged in.

BULLETIN BOARD FOR SAFE WORK SUGGESTIONS

The general safety committee serves as a reservoir of ideas and suggestions. In order to facilitate the consideration of all safety suggestions, a special safety committee of five foremen was appointed to meet with the manager and two of his executive assistants, for the purpose of passing upon such suggestions. This special committee is in reality a "circulating committee" in that its membership frequently changes. A foreman appointed to this committee functions in that capacity for a period of only three months. Short tenure of office makes it possible for all of the foremen in the organization to sit on this committee over a period of a relatively short time. This has proved of distinct advantage for a number of reasons. In the first place, the added responsibility with



SOUTHERN PACIFIC PIER, NEW YORK, WHERE QUANTITIES OF FREIGHT MOVES FROM TRUCK TO SHIP AND VICE VERSA



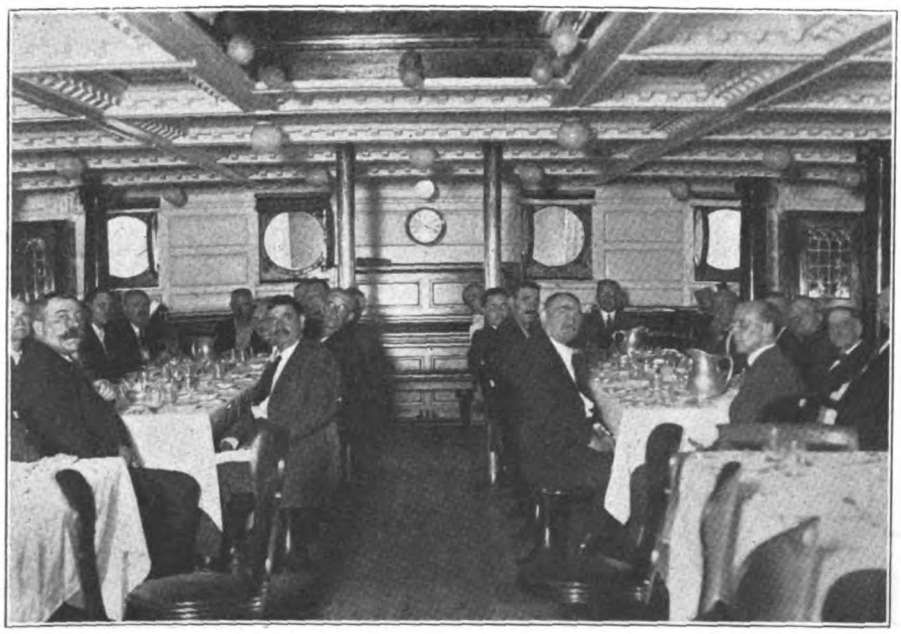
AT LEFT—METHOD OF HANDLING GENERAL CARGO FROM TRUCK TO PIER—AT RIGHT—MOVING FREIGHT ON PIER ITSELF BY ELECTR IC TRUCK

reference to the reduction of accidents gives a foreman a healthy appreciation of the importance of the safety program. Another and very important benefit which has grown out of this feature is the fact that this committee meets in the manager's office with the manager and several other executive officers of the company, and there can be no doubting the inspirational effect this has on the foremen, as is evidenced by the fact that they are thinking of management problems in a way that has never before been experienced. It broadens their point of view to management's responsibilities regarding many factors in the business outside of the safety program.

The foremen have come to realize the importance of keeping costs down, the importance of the elimination of waste, and as a matter of fact, the "by-products" of the safety movement on the Southern Pacific Steamship piers have more than paid for the whole safety effort. Better results in all around efficiency have resulted.

The second objective in the safety program of the Southern Pacific Steamship lines was the development and maintenance of systematic safety advertisement and education among all employes. In order to accomplish this aim, the company made use of two educational features.

First each stevedoring foreman became a "missionary" for the cause of safe work among his men. Second a comprehensive bulletin board system based upon practical scientific advertising principles was secured to keep the safe work suggestion constantly before the men.



FOREMEN AND PIER SUPERVISORS OF THE SOUTHERN PACIFIC STEAMSHIP LINES MEET AS A GENERAL SAFETY COMMITTEE EACH MONTH ON ONE OF THE COMPANY'S SHIPS

The stevedoring foremen, by reason of their constant contact with the men as they do their work, were able to set an excellent example to instruct men in safe practice, and by giving safety their co-operative support, they impressed their men with the importance of safety methods. Everyone who is acquainted with the relationship existing between foremen and and men knows that the formen's attitude regarding any project is one of the biggest single factors in "converting" workers.

The company installed large, attractive bulletin boards at the entrance to the piers where every man must pass them several times a day. One of the features of these bulletin boards was a large 14 x 17-inch photograph, featuring current news events of the world. We all know of the power of news pictures to attract attention, and this scientific advertising principle was used to attract men to the bulletin boards. These news pictures are changed every day, and thus interest in the bulletin boards is kept alive at all times.

Along with the news pictures are displayed safety posters, safety records, letters from the management, good will and morale building bulletins, and many other current facts and ideas which the management desires to keep before the men.

Education In Safe Habits

Advertisers have found that the public can be educated to a desired point of view by the process of repeated suggestion. Using this principle in advertising safety and educating the workers in safe habits, the Southern Pacific Steamship lines erected small bulletin boards at "accident-possible" locations throughout the piers, so that one of them

(*Continued on page* 44)

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1927	460	1,936,478	515	2,074,694
February	408	1,679,912	468	1,962,365
January	417	1,736,991	455	1,868,270
December	466	1,867,630	548	2,171,938
November	454	1,909,756	477	1,885,401
October	486	1,954,853	542	2,301,465
September	492	2,087,694	543	2,270,398
August	491	2,034,147	507	2,075,643
July	493	1,943,133	546	2,251,396
June, 1926	542	2,337,678	563	2,279,208

Baltimore

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1927	100	308,501	95	301,401
January	117	362,553	126	361,277
December	245	722,141	269	783,058
November	292	818,707	298	853,723
October	271	791,999	261	783,263
September	230	678,127	224	670,465
August	228	672,453	221	639,677
July	211	644,261	202	603,648
June	138	402,230	132	371,781
May, 1926	120	369,729	121	355,443

New Orleans

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1927	276	712,619	278	695,933
February	240	632,092	249	628,762
January	240	697,039	244	712,284
December	259	745,636	266	755,204
November	253	731,871	238	685,253
October	236	673,606	250	721,608
September	226	620,095	240	666,778
August	275	764,464	256	721,654
July	263	716,066	270	739,005
June, 1926	255	658,385	221	665,960

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)
(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1927	96	223,255	58	131,147
February	81	190,536	48	126,619
January	79	208,354	59	167,258
December	145	373,902	129	341,421
November	168	429,403	139	377,016
October	145	370,112	128	329,420
September	107	234,144	82	196,434
August	109	248,435	81	170,661
July	92	191,680	69	128,381
June, 1926	104	229,631	56	109,561

Norfolk and Newport News

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1927	32	87,970	98	264,863
February	31	88,928	77	232,403
January	49	134,238	118	350,311
December	216	636,483	254	781,545
November	184	527,290	281	782,914
October	252	683,297	307	850,828
September	252	705,604	281	766,503
August	188	545,861	255	733,837
July	267	727,374	309	854,305
June, 1926	78	215,803	171	502,701

Charleston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1927	28	84,155	81	85,476
February	27	81,829	33	158,088
January	33	96,054	31	77,315
December	33	94,427	39	102,724
November	39	114,449	39	103,266
October	11	32,323	15	40,127
September	22	65,872	34	98,447
August	24	64,334	20	51,505
July	13	37,020	13	33,908
June, 1926	8	27,095	10	30,601

Boston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1927	95	301,413	59	187,556
February	83	277,063	40	119,246
January	88	266,147	51	159,241
December	97	286,013	52	170,314
November	89	275,245	56	177,876
October	109	300,921	58	171,933
September	105	308,189	83	246,186
August	128	321,377	96	206,879
July	152	336,135	108	274,513
June, 1926	164	370,526	109	262,468

Savannah

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
January, 1927	39	.....	34	96,410
December	38	107,763	36	104,445
November	40	97,689	33	102,822
October	50	115,821	39	98,521
September	46	120,271	42	113,706
August	42	97,563	30	76,030
July	33	88,673	27	71,040
June	43	106,733	36	95,000
May	36	96,175	32	85,198
April, 1926	37	104,323	36	105,821

Galveston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1927	43	114,628	82	248,364
January	47	146,318	97	318,609
December	56	147,040	103	302,474
November	64	180,917	118	359,948
October	47	112,816	118	352,203
September	52	139,219	127	368,302
August	55	129,477	131	389,432
July	60	164,241	116	352,290
June	53	119,497	72	185,444
May, 1926	28	65,578	61	180,449

Portland, Me.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1927	23	63,195	27	73,944
February	23	65,826	21	59,178
January	25	59,155	26	66,791
December	32	71,748	34	77,400
November	20	34,092	20	34,917
October	20	48,468	23	52,900
September	24	43,783	19	35,828
August	23	47,089	26	45,669
July, 1926	27	47,885	26	47,569

Key West

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1927	80	91,602	75	93,700
February	90	101,179	84	102,571
January	89	116,112	89	119,191
December	92	113,985	87	104,448
November	97	116,965	97	115,032
October	78	92,987	79	96,718
September	81	91,321	80	88,844
August	84	98,702	87	99,362
July	78	86,124	77	86,323
June, 1926	94	110,100	94	108,581

Los Angeles

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1927	156	451,428	165	442,022
February	144	418,190	144	404,753
January	137	420,426	138	381,692
December	155	438,464	123	386,004
November	184	439,736	138	387,937
October	187	448,038	155	421,807
September	151	406,314	211	386,739
August	143	458,240	151	399,349
July	127	460,296	103	352,367
June	123	349,936	88	344,187
May, 1926	133	376,720	112	351,123

Providence

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1927	3	10,380	6	23,696
January	3	9,632	6	20,091
December	5	17,666	5	19,074
November	2	7,689	2	7,690
October	7	23,091	8	29,815
September	5	20,651	5	22,324
August	6	20,764	3	12,299
July	7	29,207	5	18,641
June	5	17,954	3	8,355
May, 1926	7	25,057	6	20,806

Mobile

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1927	107	217,848	98	197,395
February	99	249,158	86	199,907
January	96	224,819	83	191,752
December	82	164,129	82	174,618
November	90	200,301	83	182,839
October	98	213,430	99	211,785
September	84	179,225	75	165,838
August	89	166,164	81	158,197
July	86	153,642	84	159,256
June, 1926	89	168,610	89	163,318

San Francisco

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1927	145	555,324	148	586,354
February	147	561,214	138	513,253
January	133	497,560	141	522,806
December	134	520,962	134	500,347
November	128	543,103	139	512,671
October	145	532,024	153	575,263
September	170	568,323	156	561,513
August	169	580,310	111	466,346
July	160	523,527	102	495,849
June, 1926	142	561,774	100	419,036

Portland, Oreg.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1927	21	78,379	31	106,768
February	15	63,320	28	106,355
January	29	102,736	39	134,127
December	34	131,426	56	213,861
November	34	135,455	48	178,820
October	41	151,013	59	217,745
September	33	126,772	56	201,152
August	40	150,609	46	167,419
July	24	93,977	33	127,270
June, 1926	22	77,850	45	156,103

Seattle

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1927	39	159,034	44	175,937
February	40	170,776	45	195,692
January	53	233,914	47	192,233
December	42	176,065	54	201,988
November	63	234,742	54	231,343
October	56	236,587	55	230,412
September	54	219,623	58	233,320
August	53	229,111	48	206,042
July	35	146,670	31	126,407
June, 1926	39	165,989	42	181,090

Port Arthur

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1927	34	80,063	31	84,324
January	22	57,644	28	84,531
December	25	72,885	31	100,184
November	25	67,293	31	96,171
October	19	53,558	23	71,270
September	15	43,874	22	72,960
August	19	63,639	24	71,545
July	25	79,464	32	98,637
June	22	70,743	30	97,056
May	20	60,276	36	95,754
April, 1926	32	95,592	38	108,923

Reviews of Late Books

Stability and Seaworthiness of Ships, by T. B. Abell, O. B. E. professor of naval architecture in the University of Liverpool, 297 pages, 5½ x 8¾ inches; published by the University Press of Liverpool, Ltd., Hodder and Stoughton, Ltd., London and furnished by MARINE REVIEW for $5.00 postpaid and in Europe by the Penton Publishing Co., Ltd., Caxton House, London for 18 shillings net.

This book, for all that it is written by one of Great Britain's leading scientists in naval architecture, gives consideration to those practical problems affecting a ship's stability and seaworthiness which the shipmaster may be called upon to deal with or consider in the ordinary routine of his calling.

The subject of stability is treated in such a manner as to render the book valuable also to marine engineer officers who although they are not responsible for the loading of ships, have in their charge the many appliances which are used for securing stability. Therefore, a knowledge of stability such as they may gain from this book will be of service to them also.

The first several chapters of the book describe the movements of the center of gravity and the center buoyancy of the ship during ordinary loading operations. After the detail knowledge of these factors has been obtained the general problem of equilibrium is discussed. It is felt that this is the best way to meet the requirements of readers unfamiliar with the subject. Throughout all calculations only the simpler algebraic and trigonometrical expressions are used and which are familiar to the reader. There is also kept constantly before him the mechanical or physical meanings of the expressions used.

The stable ship is dealt with in the main portion of the book but the complicated and disconcerting behavior of an unstable ship is also presented in a simple manner and precautions are suggested in endeavoring to rectify a list due to stability. The book contains many practical diagrams and tables and is well printed on good stock.

There are eleven chapters, the headings which may be enumerated as follows: 1. Weight and Center of Gravity; 2. Buoyancy and Center Buoyancy; 3. Equilibrium and Stability; 4. Experimental Determination of Stability; 5. The Ship in Motion; 6. Special Cargoes; 7. Loading and Ballasting; 8. Trim; 9. Small Stability and Negative Stability; 10. Sea Worthiness; 11. Estimates of Areas and Volumes and of Centers of Gravity or Centers of Figure of Areas and Volumes; Appendix.

* * *

Ports and Terminal Facilities, by Roy S. MacElwee; cloth, 446 pages, 6 x 9 inches fully illustrated; published by McGraw-Hill Book Co., Inc. and furnished by MARINE REVIEW, Cleveland, for $5.00 net, postpaid, and in Europe by The Penton Publishing Co., Ltd., Caxton House, London, for 25 shillings net.

The author of this valuable book, Roy S. MacElwee, Ph. D., commissioner of port development for the Port of Charleston, S. C., is widely recognized as an authority on port development and terminal facilities.

Ports and Terminal Facilities gives a thorough and detailed discussion of marine terminal facilities. Though it is, in a sense, a second edition of the book of the same title by the same author which appeared in 1918 it is completely rewritten and so much enlarged that it is virtually a new book. It discusses the problem of material equipment of ocean gateways from the point of view of low cost of maintenance and operation through proper design to suit the particular trade for which such equipment is being developed.

Traffic conditions are analyzed and studied in their relation to port facilities for best service.

Part I of *Ports and Terminal Facilities* contains four chapters as follows: The Nature of the Problem, which is sub-divided into subjects such as, the importance of port facilities in national defence, and in transportation, the nation's second largest industry, freight costs at sea, range of competition; General Characteristics of a Well Co-ordinated Sea Port; Wharf Design—Quay Piers and Other Types, in two chapters. Part II discusses general cargo wharf equipment in eight chapters with the following headings: General Cargo Transfer—Winches, Derricks, Cranes, Conveyors; Transfer and Handling of Uniform Sizes of Packages or Special Freight; The Transit Shed; Transit Shed Equipment; Marine Terminal Track Arrangements and Drayways; The Width of the Wharf Apron; The Port Terminal Warehouse (in two chapters). Part III covers port terminal facilities other than general cargo (passengers, bulk, industries). There are five chapters in this part of the book with the following headings: Ocean Passenger Terminals Bulk Freight-Ore; Bulk Freight-Coal; Bulk Freight—Liquids and Grain; The Industrial Harbor and Upland Development. In appendix A the British regulations against the discharge of oil in navigable waters is published in full.

From the Editor's Mail

To the Editor:

In your article on page 36 of the March MARINE REVIEW under the caption "Launch Second Carferry at Manitowoc," you state the Carferry GRAND RAPIDS is now operating in the transport of railway cars across Lake Michigan between Benton Harbor and Milwaukee. This should read between Grand Haven and Milwaukee.

The Grand Trunk railway have since put the carferry MADISON in service so that there are now operating four carferries between Grand Haven and Milwaukee, each making two trips every 24 hours.

In addition to this the Wisconsin & Michigan Transportation Co. operate break-bulk freight and passenger steamers between Grand Haven and Milwaukee maintaining all the year around service. The Goodrich Transit Co. do the same between this port and Chicago. The Construction Materials Co. have headquarters here for their large fleet of steamers, operating from their gravel plant here, and the United States Engineer office maintain headquarters here for the Dredge GEN. G. G. MEADE and other dredges and smaller crafts so that we do not feel that we should be mixed up in a journal like the MARINE REVIEW with some other port of lesser importance.

Yours, very truly,
Dake Engine Co., Grand Haven, Mich.
H. Z. NYLAND,

Reduce Lake Vessels' Fuel Bill-IV

A Study of the Influence of Boilers, Main Machinery and Auxiliaries on Earnings of Great Lakes Cargo Vessels

By Henry Penton

ANY owner who presents the builder with a clear specification prepared with knowledge of the subject as to engineering and the conditions affecting operation may look for results provided he does his own part afterward.

A few examples from actual practice as showing the possibilities of application of the above principle are given below. First, however, the condensed trial report of ships S1 and S2, Table I, which appeared in the first part of this article is presented because the ships not only exhibit results considerably better than the average and better than any of recent years, but the trials were so painstakingly conducted as to be noteworthy.

Trials Carefully Conducted

These trials were conducted in 1894; over 32 years since. Both ships were almost new; both were fitted with triple engines and with Scotch boilers with positive heated draft. All auxiliaries were attached to the main engine except the fan. The trials were conducted by the head of the engineering department of a midwestern university and a corps of student assistants on Lake Superior during the summer vacation. Both ships had consorts, giving ample time for observations and repetitions. The exhaust steam from fan and steering engine was condensed in a tubular heater, converted to use as a surface condenser, and weighed. The cooling water for condensation was supplied by the cold water pump on the main engine making an additional pump unnecessary. The boiler feed water was weighed through two tanks of about 100 gallons capacity each, the upper mounted on scales and filled from the air pump discharge and emptied by gravity into the lower which supplied the feed pumps. All trials were with saturated steam, no superheaters being fitted. Coal was weighed as used, over a platform scale in the fireroom. Samples were collected by riddling and about 10 pounds dried out over night in the oven of the galley range, to determine moisture. Three samples were subjected later to chemical analysis and three to calorimeter tests and the B.t.u. values are the means of these determinations. Three trials were run of 12 hours each and at the same duty, that is to say, without change of conditions and in order to check observations. Indicator diagrams were taken every half hour at first and later every hour. The writer was present in both cases as the representative of the engine builder but took no part in trials or collection of data and offered no suggestions beyond that of subdividing the firing period so that instead of following the practice usual among firemen of firing all doors at the same time the period was equally divided and one door fired at each interval, alternating boilers.

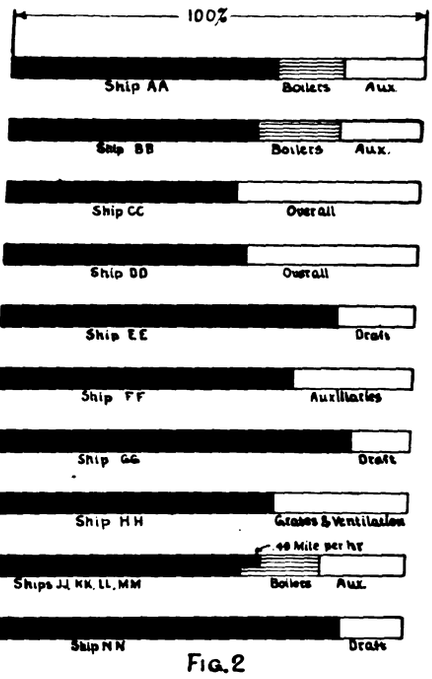


FIG. 2

IMPROVED EFFICIENCIES IN LAKE VESSELS AFTER CERTAIN MODIFICATIONS IN POWER PLANT. THE BLACK AND SHADED PORTIONS INDICATE IMPROVEMENT IN FUEL PERFORMANCE AFTER ALTERATIONS

A condensed report of these trials appears in Part I of this article, in Table IV, on page 64 in the February issue of MARINE REVIEW.

During these trials the only auxiliaries in use were the fan and steerer and during the last trial the steam steerer was thrown out and the ship steered by hand to determine the steam used by each. Following the trials reported above the attached feed pumps of S1 were cut out and the boilers fed by the general service pump of the duplex, outside-packed plunger type, and the water weighed as with the attached pumps. This trial covered six hours. The pump valves and pistons were examined and tested for water and steam tightness. The former were found tight; there was about the usual leakage at the latter. The steam consumption amounted to 422 pounds per hour, or about 325 pounds per horsepower based on the calculated work done. This compares with 12.05 pounds when done by the main engine. Of course there was no exhaust heat recovery during these trials because the exhaust steam was all going to the surface condenser.

Efficiency Not Improved

These trials show very clearly that both as to steam and fuel the later ships do not exhibit any improvement over earlier examples, rather the contrary. The good boiler work is due in part to the quality of the fuel but chiefly to the high efficiency of the draft system and which in turn is due in considerable measure to the firing system referred to. It is desired to call attention to this because the universal practice in firing defeats in large measure the very end and aim of the draft system. The result is that at the time when the largest volume of air is needed and at the highest temperature the latter is at its lowest, whereas if rotation is insisted upon the temperature of the draft air will be more nearly uniform, combustion improved and smoke reduced and the temperature of the stack lowered. The low stack temperatures observed are partly due to this but still more to the liberal proportions of air heating surface and air passages and the care with which they were arranged to produce low velocities and allow time for heat absorption. Lack of attention to these features is responsible for much of the relatively inferior performance of many ships. Concentration on this one feature along of getting high draft temperatures, low stack temperatures and methodical firing will

This is Part IV and completes Mr. Penton's article, which began in the February issue.

produce surprises. The nearer hand firing can be made to approximate continuous firing the better the performance will be but it is a matter of discipline entirely. No one need expect results who neglects the necessary steps to obtain them.

Draft temperatures approximating 300 degrees should be expected, with stack temperatures even lower, but if a stack temperature much in excess of the draft temperature should be found an investigation should be undertaken without delay.

The examples of application of corrective methods to existing ships follow. Each represents an actual ship in regular service. For more convenient comparison the results in each case have been reduced to chart form and are shown in Fig. 2. The fuel consumptions are based on a full season's work in each case as compared with the average of at least two, and in some instances three, previous seasons and for equal trips and approximately equal mileage and consequently include all lay time and port work. Where speeds are referred to it is to be noted that they do not mean occasional observations but are season averages of total miles run divided by total hours under way and include all slows from all causes. This is an impressive demonstration of the effect of uniform pressures, arising out of better steaming conditions, upon speeds, as already referred to. For convenience all original performances are reduced to a common base and given a rating of 100, which indicates fuel consumption prior to alterations. The black and shaded portions indicate the extent of improved fuel performance; the solid black representing the final stage after alterations were completed. See Fig. 2, page 33.

Ship AA. Operating on a fixed route with constant mileage. Triple engine, three scotch boilers, natural draft. All auxiliaries independent, steam driven. Free steamer. Air pump single, double acting; all other pumps duplex. All in good order. Air pump, feed pumps, bilge pump, cold water pump and sanitary pump replaced by attached pumps. No other alterations of any sort. Fuel reduction as shown. Following year one boiler removed and positive heated draft applied to two remaining boilers. No other alterations. Further reduction as shown. Fuel from car weights direct from car to ship.

Ship BB. Sister to AA, in same service. Same treatment as to auxiliaries. Following year old boilers removed and two new substituted with heated draft. Results as shown.

In both the foregoing instances before undertaking any alterations careful observations were made of engines as to power, revolutions, points of cut-off, trim of ship, weather conditions, etc. After alterations observations were repeated under the same conditions. No difference could be detected in AA as to either power or revolutions; BB seemed to show slightly higher power and revolutions, apparently simply due to more uniform steam conditions.

Ship CC. Between head of lakes and Lake Erie ports. Triple engines, three scotch boilers, natural draft. Fair steamer but overpowered. Auxiliaries attached except feed pump. Reduced cylinder diameters and altered valve gear, attached feed pumps, altered propeller, substituted two boilers with heated draft, changed feed heating system. Combined result shown. Fuel, invoice weights. Speed increase with reduced cyinders, but 14 pounds increase in steam pressure 0.2 mile per hour. Deadweight increased about 60 tons. Cost extinguished in two years.

Ship DD. Between head of Lakes and Lake Erie. Sister of CC except all auxiliaries attached. Same treatment as CC. Combined result shown. Fuel invoice weights. Speed increase with reduced cylinders and 10 pounds higher steam pressure, 0.35 miles per hour. Deadweight increased about 60 tons; cost extinguished in two years.

Ship EE. General cargo trade. Triple engine, three scotch boilers, natural draft. Removed one boiler and fitted heated draft to remaining boilers. No other alterations. Result shows average of year's working as compared with previous years. Increased deadweight about 70 tons. Fuel, invoice weights. Cost extinextinguished in one season.

Ship FF. Operating on nearly constant route and mileage. Triple engines with all auxiliaries independent steam driven, duplex. All in good order. Two scotch boilers with natural draft. Hard steamer. Substituted attached auxiliaries. No other alterations of any kind. Results as shown. Ship steaming freely and without effort. No reduction in power or revolutions but an increase in average speed of 0.1 mile per hour at same point of cut-off as before alterations, due apparently to uniform steaming conditions. Fuel, car weights from car direct to ship. Cost extinguished in one season.

Ship GG. Package freighter. Triple engines, two scotch boilers, mechanical heated draft. All auxiliaries attached. Hard steamer. Remodeled draft system, increasing both air heating surface and draft area and reducing air velocities. No other alterations. Stack temperature reduced over 250 degrees, draft temperatures increased over 100 degrees, air pressures reduced and stokehold conditions greatly improved. Smoking largely abated. Results as shown. Speed increased about 0.3 mile per hour due to better steaming. Fuel invoice weights. Cost extinguished in one season.

Ship HH. Same as FF. but with attached auxiliaries. Very hard steamer. Reduced grates from 7 feet to 4 feet 6 inches and added ventilation to firehold and supplied feed water heater. No other alterations of any kind. Ship steaming freely and without effort. Comparative results shown. Speed increased average 0.6 mile per hour due to more uniform steaming. Fuel, car weights direct from car to ship. *Cost extinguished in two trips.*

Ships JJ, KK, LL, and MM. Sisters operating on fixed routes with constant mileage. Triple engines, three scotch boilers, natural draft. Fair steamers under good weather conditions. All auxiliaries independent duplex. All machinery in good order. Observations as to powers, revolutions, etc., before undertaking any alterations and points of cut-off marked. Attached auxiliaries substituted for independent. No other alterations. Average result as shown. No reduction in power or revolutions discoverable. Following year two boilers with heated draft substituted for old boilers. Average as shown. Average speed increased however, 0.49 miles at same time due to improved steaming conditions and lengthened cut-off possible in consequence. Fuel consumption corrected for constant speed approximately as shown. Full, car weights direct from car to ship. Cost of changing auxiliaries extinguished first season. Boiler alterations in two years. Increase in deadweight about 65 tons.

Ship NN. Bulk freighter, general trade. Triple engines, two scotch boilers, mechanical heated draft. Remodeled draft system, increasing air heating surface and draft area and reducing air velocities. Increased draft temperature about 90 degrees and lowered stack temperature about 225 degrees, reduced smoking materially. Result shown. Cost extinguished in one season.

The foregoing are a few examples selected out of a number as representative of various conditions and the possibilities of improvement with existing equipment. None of these ships represented the best thought of the builder but merely the builder's response to the owner's idea of his wants, doubtless influenced more or less by competitive conditions. If the owner prefers to subordinate the substance to the shadow doubtless that is his own affair, but the builder should not be subjected to criticism if results are not forthcoming.

There are hundreds of ships of which it is perfectly safe to say that a little study would result in large savings at small cost, and each ship is a study by herself. In many cases the cost would disappear, or be largely reduced, as maintenance and repair. As in ship HH for example in a small way, where the only actual change was in the addition of a feed heater, because the furnace fittings required renewal in any case. The modification in ventilation was a carpenter's job and effected in a short time with very little material.

Once more the point to be driven home is that until the obvious and certain possibilities of the familiar and fairly satisfactory type of equipment have been exhausted it is neither good engineering nor sound business

(*Continued on page* 48)

British Maritime Affairs Show Decided Improvement

By Vincent Delport
European Manager Marine Review

BRITISH shipbuilding is actively making up for lost time. Some yards, closed for several months, have resumed operations, and the amount of work on hand is steadily increasing. At the same time the freight market is steady, and although rates have dropped from the high mark which they reached in November 1926 they remain slightly above the level of one year ago. Whereas signs of a resumption of activities are unquestionable, it is generally recognized that business under present conditions is hardly remunerative.

It was pointed out by Lord Kylsant, chairman and managing director of Lamport & Holt, Ltd., at their fifteenth ordinary general meeting that shipping companies have not, as has sometimes been stated, much benefited from the results of last year's industrial stoppage. The enhanced rates of passage-money and high freight rates were not sufficient to make up for the increased cost of fuel, for going out of their way to load bunkers in foreign ports, and for the loss of export trade. The fact that the profits of companies have been seriously curtailed last year is corroborated by a survey of the chamber of shipping. The board of trade has come to the same conclusion and estimates that the gross earnings of British ships engaged in foreign trade fell off last year by £4,000,000 ($19,400,000), and this figure is considered by the chamber of shipping as too conservative. These conditions still pertain now to some extent, at any rate with respect to fuel costs and export business. The shipyards also have to pay a high price for fuel and steel and they find difficulty in obtaining their supplies.

Last year the United Kingdom undoubtedly went backward in shipbuilding output in comparison with the rest of the world, and with the difficulties which British industry still has to face the lost ground can only be recovered step by step. It is therefore gratifying to note that a few weeks ago two British firms secured orders for six vessels of a total value of about £1,000,000 ($4,850,000) in the face of strong competition from continental shipbuilders. Three of these ships are oil tank vessels each of 15,000 tons deadweight, to be built by the Furness Shipbuilding Co., Ltd., Havertonhill-on-Tees. The other three are twin-screw oil tank steamers of about 3700 tons deadweight each, to be built by Palmer's Shipbuilding & Iron Co., Ltd., Jarrow-on-Tyne. All six vessels will be on the Isherwood bracketless system and fitted with diesel machinery constructed by Richardson, Westgarth & Co., Ltd., Hartlepool. The contracts were placed by the Gulf Refining Co. of Pittsburgh.

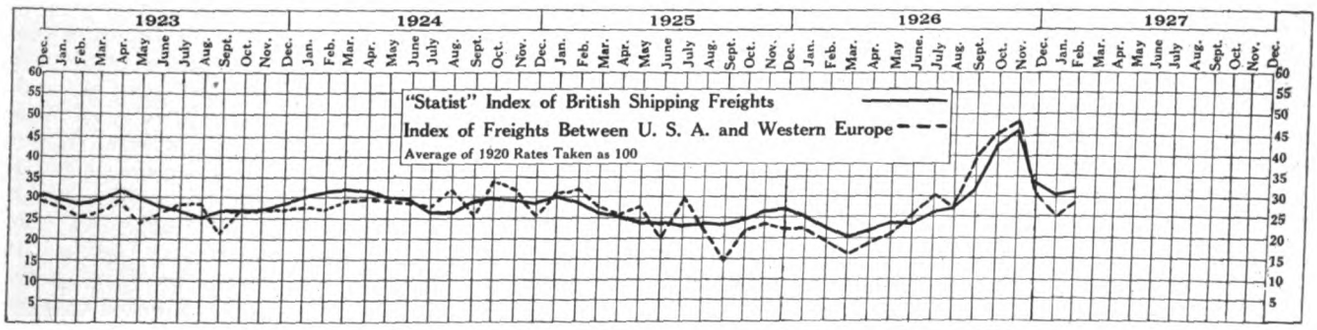


DIAGRAM SHOWING FLUCTUATION OF OCEAN FREIGHT RATES FOR FOUR YEARS AND TWO MONTHS

Shipbuilding Contracts Awarded

Numerous other contracts have been awarded since the beginning of the year, especially to the Clyde and Tyne shipyards. It is noteworthy that the output on the Clyde for January and February was the lowest on record. In January only one vessel of 5209 tons was launched, and in February only 14 small vessels aggregating about 8000 tons were launched. The output for these two months in 1926 was 25 vessels of 60,000 tons. This is due to the scarcity of fuel and steel which still was appreciable three months after work was resumed at the coal mines. In March 11 vessels of 30,915 tons were launched, making a total of 26 vessels of 44,000 tons for the first quarter. An interesting point about the contracts recently received on the Clyde is that the majority are for motorships, some being repeat orders. This tends to show that the internal combustion engine is gaining favor in Great Britain, which country is somewhat behind the other countries of the world in the building of this class of ship. Among the more recent orders which the Clyde yards have obtained are one 10,000-ton tanker placed by D. and W. Henderson with Munting & Son, one twin-screw motor vessel 150 feet in length and of about 450 tons measurement, to be built by A. and J. Inglis of Pointhouse for cargo and passenger service on a South American river, and a diesel-electric oil tanker, to be built by Scott's Shipbuilding & Engineering Co., Greenock, and ordered by the Atlantic Refining Co. of Philadelphia. This vessel will have engines of the Carells-Ingersoll-Rand type, made by the Carells Co. of Ghent, Belgium, and the electrical gear will be supplied by the British Thomson-Houston Co.

Less Shipyard Unemployment

On the northeast coast, at Newcastle-on-Tyne, unemployment in the yards is decreasing, and supplies of steel plates and sections are becoming more plentiful. Armstrong-Whitworth & Co., Ltd., have secured an order for two 10,000-ton vessels from British Tankers, Ltd.; the engines will be of the triple-expansion type. The firm now has 12 tankers and mer-

chant vessels to build at their Walker yard. Other orders for vessels ranging from 3000 to 9000 tons deadweight have been received during the past three months by various firms in the district, some of which will be busy for several months to come. The Furness Shipbuilding Co. can look forward to two years' work, and the Palmer Shipbuilding & Iron Co. has at least 20 ships on its books. The ship-repairing departments also are busy and successful tendering has of late been effected. At Belfast, Ireland, Harland and Wolff have reopened two yards which had been closed for several years. Workman, Clark & Co., Ltd., launched at the beginning of March the first of the passenger and fruit carriers built for the United Fruit Co. for service between Boston and the West Indies. The Peninsular and Oriental company is reported to have invited tenders for the construction of five mail boats of about 20,000 tons each. Belfast interests are hoping that at least a portion of this contract will be awarded to them.

The ship sale market has been unusually active of late. One of the largest sales of cargo steamers which have taken place for years is that of the fleet of cargo steamers comprising five large vessels aggregating about 40,000 tons deadweight and built a little over two years ago; they belonged to the firm of Charles Radcliffe, Ltd., of Cardiff, Wales, and were purchased by Haldin & Co., Ltd., on behalf of the Court Line, Ltd., and the United British Steamship Co., Ltd., for about £315,000 ($1,527,750). The ships will be used in the Argentine and North American trade of Haldin & Co. in grain, wool and general cargo.

A new steamer, only now completing, has been purchased by the Glasgow firm of J. and J. Denholm. This vessel, which will carry about 9850 tons deadweight, has been built by the firm of Lithgows, Ltd., of Port Glasgow and will be named HOLMPARK. The BAWTRY, of 9100 tons deadweight and built ten years ago, was acquired by the Arbor Shipping Co., Ltd., London, at £37,000 ($179,450) and has now been taken over by Mr. N. G. Livanos of London at £38,500 ($186,800); this vessel formerly belonged to the Canadian Pacific railroad. The MANHATTAN, of the Atlantic Transport Lines, carrying about 12,000 tons deadweight and built in 1898, was sold to Italian shipbreakers for about £15,000 ($72,750). This transaction took place last January and a similar one, that of the MICHIGAN, was made in October last year, also with Italian shipbreakers. Three steamers of the Prince Line, Ltd., managed by Furness, Withy & Co., were sold for £32,000 ($155,200), £40,000 ($194,000) and £45,000 ($218,250); these are the BURMESE PRINCE, 8020 tons, built in 1911, the ROMAN PRINCE, a two-deck and sheltered-deck steamer of 9150 tons, built in 1914, and the MOORISH PRINCE of 9300 tons, also built in 1914. Many other transactions have taken place during the past three months.

Freight Market Fairly Good

Present conditions in the freight market are fairly satisfactory. There has been a marked improvement in the River Plate homeward freight market, and with the good crops anticipated for the coming season, indications point to the current year being more favorable than the previous one. The accompanying chart illustrating the index numbers compiled by the *Statist*, London, shows a substantial drop from the abnormally high figures of October and November 1926. The figures since the beginning of this year compare favorably, however, with those prevailing at this time one year ago.

There still is a considerable surplus of unemployed tonnage, as shown by Lloyd's figures for the past year. In 1914 the total tonnage of seagoing steel and iron steamers and motorships was 42,514,000 tons, whereas in 1926 it was 52,117,000 tons, or an increase of over 16,500,000 tons. The surplus of unemployed tonnage is gradually being reduced, but it still is large enough to cause owners difficulties in finding profitable employment for their ships. As regards the immediate outlook, the chamber of shipping states that although the economic position of the shipping industry is not at the moment materially better than it was a year ago, there are, perhaps, signs of an improvement, depending ultimately upon the permanence of factors which make for a general restoration of trade. It is pointed out that during 1926 the cost of supplies, maintenance and repairs for one of the largest companies was found to be, on the average, 75 per cent above the standard before the war, whereas the average rise in freights was only about 20 per cent above pre-war levels. It is owing to the expenses incurred during the last six months of 1926 by the lines plying to Indian ports and Ceylon that freight rates to these ports have been revised upward, both from Great Britain and from the continent. It is anticipated that the rates from the United Kingdom and the continent will gradually be brought to a parity. A feature of the moment is the resumption of short-distance trade and the gradual revival in the employment of many small ships trading in coal between Britain and the continent.

Look For Active Grain Business

Notwithstanding the prospects of active grain business with Argentine, the homeward River Plate market is slightly easier in view of the ample supply of tonnage. April loadings are on the basis of about 27s ($6.55), but 25s ($6.05) for May-June. Hampton Roads coal remains depressed under the threat of a strike in the United States, though a few shipments have been made at $3 to west Italy. Cuban sugar offers at 22s 6d ($5.45). Montreal's terms for May grain to the continent are about 16 cents per 100 pounds. There is a good miscellaneous demand in the eastern market, but business is held in check to a considerable extent owing to the Chinese situation. Large steamers are steadily chartering from Australia. The Mediterranean and Black Sea markets are improving and ore shipments are decidedly more active, chartering to British ports being at about 7s 6d ($1.80). Coal freights are steady. The question of port charges has been brought before parliament, where it was pointed out by Sir Frederick Wise that costs of loading and discharging cargo in Great Britain are higher than in continental ports, due to lower labor costs on the continent. The question also was taken up in a paper on loading and unloading facilities in ships and on land read before the North-East Coast Institution of Engineers and Shipbuilders by Mr. R. I. Dodsworth, a director of Furness, Withy & Co., Ltd. The chamber of shipping also has taken the matter in hand and port authorities are urged to do all in their power to increase facilities and make those improvements over which they have control.

The movement of vessels in the British ports since the beginning of this year compares favorably with the some period of last year. In February 1927, 4145 vessels of 4,089,769 tons entered British ports with cargoes, and 4673 vessels of 4,682,015 tons cleared with cargoes to foreign destinations, including British dominions. During the first two months of the year a total of 8592 vessels, trading foreign, aggregating 9,093,964 tons, entered British ports with cargoes. This compares with 7883 vessels and 8,171,592 tons in the corresponding period of 1926. Of this year's tonnage, 23.3 per cent came from the Atlantic coast

(*Continued on page 46*)

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties— A Record of Collisions, Wrecks, Fires and Losses

Name	Date	Nature	Place	Damage Resulting
Athelfoam	Mar. 16	Collision	Delaware Bay	Not stated
Angler	Mar. 22	Sank	Yonkers	
Arthur W. Sewell	Mar. 31	Aground	Gedney Channel	Floated
Almorada	Mar. 2	Aground	Buenos Ayres	Sank
Akashi Maru	Mar. 8	Ashore	Dairen	Bottom
Amiral Ponty	Mar. 11	Aground	Bordeaux	Floated
Ak Deniz	Mar. 17	Ashore	London	Floated
Altair	Mar. 17	Stranded	Nr. Bergqvara	Not stated
Amanda	Mar. 17	Cyclone	Tamatave	Total loss
Amiral Fourichon	Mar. 2?	Fire	Antwerp	Damaged
Antar	Mar. 30	Collision	Piraeus	Slight
Altona	Mar. 30	Ashore	Gothenburg	Floated
Alcinous	Mar. 30	Collision	Hamburg	Not stated
Author	April 1	Collision	Nr. Gibraltar	Bows
Baron Ruthven	Mar. 14	Collision	Grybbs Landing	Not stated
Baron Glenconner	Mar. 23	Aground	Romer Shoal	Floated
Belchers	Mar. 23	Fire	Off Columbia River	Not stated
Beechtree	Mar. 3	Ashore	Peal Rocks	Total loss
Budgebudge	Mar. 9	Fire	Calcutta	Considerable
Buckingham	Mar. 6	Collision	At sea	Not stated
Borglum	April 4	Stranded	No. of Miami	Floated
Brecon	Mar. 20	Collision	River Thames	Damaged
Blairmore	Mar. 28	Struck pier	Genoa	Plates
Burdale	Mar. 31	Disabled	At sea	Steering gear
Coronado	Mar. 22	Stranded	Key West	Floated
Cuvamapa	Mar. 31	Collision	New York	Not stated
Cala Figuera	Mar. 7	Aground	Nr. Cuatro Torres	Not stated
Carna	Mar. 7	Aground	Puerto Plata	Not stated
Catinat	Mar. 3	Ashore	Tamatave	Total loss
Canopus	Mar. 17	Ashore	Nr. Piraeus	Not stated
Cockaponset	Mar. 29	Disabled	Houston	Engine
Cora F. Cressy	April 6	Waterlogged	Searsport	Abandoned
Castana	April 10	Collision	New York	Not stated
Carpio	Mar. 3	Fire	Malaga	Damaged
City of Canterbury	Mar. 22	Struck dock wall	Dunkirk	Plates
Carl	Mar. 24	Stranded	Nr. Falkenberg	Not stated
Canadian Commander	Mar. 23	Collision	St. Catherine's Point	Not stated
City of Mandalay	Mar. 23	Collision	St. Catherine's Point	Not stated
Commonwealth	April 8	Fire	La Have Banks	Sank
City of Omaha	April 13	Ashore	Off Korsder	Not stated
Cocle	Mar. 31	Disabled	Panama	Boilers
Chancellor	Mar. 31	Struck pier	Newlyn	Stem; bow plates
Dominion Shipper	Mar. 18	Hvy. gale	Vineyard Haven	Leaking
Doris Hamlin	Mar. 2?	Collision	Boston	Lost foretop mast & bowsprit
Dvina	Mar. 15	Struck wall	Manchester	Starboard side
Delos	Mar. 24	Ashore	Off Landskrona	Not stated
Duns Law	Mar. 31	Hvy weather	Rosario	Damaged
Eureka	Mar. 19	Fire	East Boston	Considerable
Erikur Raudi	Mar. 3	Ashore	Kudafljot	Total loss
Elemore	Mar. 10	Collision	River Yare	Bow
Empress of Canada	Mar. 14	Collision	Shanghai River	Stem
Ereno	Mar. 12	Collision	Bayonne	Not stated
E. J. Jeffrey	Mar. 21	Struck sub. object	San Francisco	Prop. blades
Fuelite	Mar. 7	Collision	Vancouver	Damaged
Fedelma	Mar. 9	Aground	Dunball	Not stated
Finchley	Mar. 10	Collision	Civita Vecchia	Not stated
Flandre	Mar. 14	Explosion	Havre	Not stated
Fernande	Mar. 21	Struck rocks	St. Nazaire	Tanks
Fred W. Thurlow	April 9	Gale	Off Cape Cod	Sank
George Washington	Mar. 21	Aground	Charleston	Floated
General Gassouin	Mar. 29	Touched ground	Port de Bouc	Propeller
General Maude	Mar. 28	Fire	London	Abandoned
Guy Thorne	Mar. 7	Stranded	Off Offersoe	Sank
George Watts	Mar. 10	Aground	Calabar	Slight
Girundia	Mar. 12	Collision	Bayonne	Below waterline
Gansfjord	April 4	Ashore	San Miquel	Floated
Godfried Bueren	Mar. 30	Collision	Hamburg	Starboard side
Gandara	April 1	Ashore	Cires Point	Forepeak
Harold Dollar	Mar. 30	Collision	Oakland	Plate
H. H. Rogers	Mar. 30	Aground	South Pass	Floated
Hazel Branch	Mar. 10	Struck sub. object	Havre	Main valves, engine
Hirado Maru	Mar. 10	Ashore	Nr. Kushiro	Not stated
Hegre	Mar. 17	Collision	Brest	Rudder
Hamilton	April 3	Fire	New York	No. 2 hold
Herbert Fischer	Mar. 22	Collision	Kaiser Wilhelm Canal	
Harebell	Mar. 22	Collision	Belfast	Not stated
Half Moon	Mar. 28	Aground	East River	Bottom
Humanitas	April 1	Aground	Rotterdam	Floated
Imperial	Mar. 13	Disabled	Lorient	Propeller
Istok	Mar. 20	Collision	River Thames	Port side
Inveresk	Mar. 23	Stranded	Nr. Bonanza	Not stated
J. L. Luckenbach	Mar. 16	Collision	Delaware Bay	Plates
Jinsho Maru	Mar. 15	Collision	Shanghai River	Amidships
John D. Archbold	April 5	Aground	South Pass	Floated
Jacinto	April 1	Collision	Nr. Gibraltar	Sank

Name	Date	Nature	Place	Damage Resulting
Kifunezan Maru	Mar. 6	Ashore	Aichiken	Not stated
Kirishima Maru	Mar. 10	Sprang leak	Off Choshi	Not stated
Krasnoe Znamja	Mar. 11	Stranded	Honningsvaag	Total wreck
Kilcredane	Mar. 14	Ashore	Hakodate	Floated
Kalmarsund XI	Mar. 9	Fire	Dakar	Forecastle
Kinoene Maru	Mar. 8	Stranded	Off Mokpo	Not stated
Lancaster	Mar. 22	Struck rock	Ches. & Del. Canal	Bottom
Leyland	Mar. 16	Stranded	Off Askernish	Not stated
Lancaster Castle	Mar. 15	Fire	Queen's Dock	Chart-room
Louise	Mar. 22	Collision	Kaiser Wm. Canal	Not stated
Lotte Reith	Mar. 29	Aground	Nr. Kaolack	Not stated
Marquette & Bessemer No. 1	Mar. 25	Struck bridge	Toledo	Forepeak
Maitland No. 1	Mar. 25	Aground	Nr. Port Maitland	Not stated
Mabay	Mar. 23	Ashore	Sagua la Grande	Floated
Marte	Mar. 16	Fire	Rio Grande	Total loss
Margot	Mar. 17	Collision	Brest	Port side
Malcombe	Mar. 21	Explosion	Off Key West	Sank
Majestic	Mar. 23	Aground	New Orleans	Rudder stock; plates; machinery
Mabay	Mar. 24	Aground	Sagua la Grande	Floated
Maritana	Mar. 19	Stranded	Berwick-on-Tweed	Not stated
Majestic IV	Mar. 1?	Sank	Off Holy Island	
Miura	Mar. 30	Ashore	Lower Sharpsnose	Total loss
Noble Maxwell	Mar. 19	Fire	East Boston	Considerable
Necanicum	April 8	Disabled	Off Coos Bay	Rudder stock—leaking
Norne	April 6	Collision	New Orleans	Not stated
Nicolaos	Mar. 24	Aground	Missolonghi	Not stated
Neville	April 1	Sank	Mount's Bay	
Ostpreussen	Mar. 15	Stranded	Black Sea	Floated
Oriole	April 6	Collision	New Orleans	Not stated
Ostara	Mar. 23	Collision	Malmo	Above water line
Oak Branch	Mar. 31	Struck quay wall	Glasgow	Storm
Ohkuni Maru	April 11	Fire	Yokohama	Not stated
President Garfield	Mar. 26	Fire	San Francisco	Slight
Prince George	Mar. 7	Collision	Vancouver	Damaged
Paul Lecat	Mar. 8	Ashore	Woosun	Not stated
Pioneer	Mar. 19	Sank	Fareham	Raised
Pilsna	Mar. 28	Fire	Port Said	Not stated
Pacific Commerce	Mar. 31	Collision	San Francisco	Slight
Robert E. Lee	Mar. 16	Fire	New York	Slight
Rijndijk	Mar. 2	Aground	Off Buenos Ayres	Not stated
Royal City	Mar. 14	Collision	Barry	Not stated
Remus	April 5	Aground	Nr. Buenaventura	Floated
Robert L. Linton	April 5	Disabled	Port Royal	Leaking
Ruth	Mar. 24	Aground	Nr. Venice	Floated
Ragnar	Mar. 23	Collision	Malmo	Serious
River Hudson	Mar. 30	Collision	Piraeus	Not stated
Respice Patriam	Mar. 31	Aground	Nr. Alberoni	Floated
Steel Inventor	Mar. 2?	Ashore	Old Providence Is.	Not stated
Seine	Mar. 3	Collision	Rouen	Bow plates
Svanen	Mar. 10	Ashore	Nr. Larvik	Not stated
Surmene Kermeti	Mar. 10	Ashore	Bender Eregli	Not stated
San Jeronimo	Mar. 11	Collision	London	Not stated
Suevier	April 3	Disabled	At sea	Rudder post
State of Maryland	April 4	Aground	Hampton Roads	Floated
Shinzan Maru	Mar. 24	Stranded	Shimonoseki	Not stated
San Salito	Mar. 30	Disabled	San Francisco	Rudder
S. Giner	Mar. 30	Disabled	Gijon	Lost prop.
S. A. H. O. P. No. 2	Mar. 30	Sank	Nr. Colon, A. R.	
Sonora	April 12	Disabled	Lake Huron	Steering gear
Sunland	Mar. 31	Hvy. weather	Marseilles	Damaged
Tobago	Mar. 6	Collision	At sea	Port side
Thelma	April 2	Collision	Nr. Old Pt. Comfort	Sank
Twickenham	April 5	Aground	St. Catherine Sound	Floated
Treberbyn	Mar. 20	Collision	River Thames	Not stated
Tocra	Mar. 24	Aground	Terranova	Floated
Tello	Mar. 24	Disabled	At sea	St. gear; rudder
Triton	Mar. 24	Gale	At sea	Rudder; circ. pump
Toledo	Mar. 2?	Ashore	Sardyngeul	Floated
Tordera	Mar. 31	Fire	Off Alhucemas	Not stated
Theophile Gautier	Mar. 31	Collided breakwater	Marseilles	Sprang leak
Ville De Marseille	Mar. 7	Stranded	Tamatave	Floated
Vestmandrod	Mar. 18	Aground	Bowater Wharf	Floated
Varanger	April 5	Disabled	Port Said	Machinery
Velinheli	Mar. 22	Collision	Belfast	Bridge
Vredenburg	Mar. 31	Aground	Melilla	Floated
Usuri Maru	Mar. 22	Fire	Adelaide	Damaged
Walter Frank	Mar. 17	Sank	New York	
Woodville	Mar. 20	Ashore	Port William	Forepeak
Wheelsman	Mar. 11	Collision	London	Considerable
William Campion	April 2	Disabled	Lisbon	Machinery
Wakamiya Maru	Mar. 23	Stranded	Off Yatabe	Wrecked
Waalhaven	Mar. 28	Ice	Boston	Hull
York	Mar. 14	Collision	Barry	Damaged
Zacapa	Mar. 17	Aground	Villedo Shoals	Floated

Personal Sketches of Marine Men

Capt. James Griffiths, President, James Griffiths & Sons

By Robert C. Hill

FROM sea-faring people, a shipping pioneer who combines imagination with hard practical common sense and a buoyant enthusiastic nature.

HIS courage and resourcefulness have never faltered in making good his faith in the steady growth of shipping to the Pacific Northwest.

YACHTING is his recreation. His love of the sport and friendly personality, have made him the best know yachtsman on the Pacific coast.

REARED in an atmosphere of shipping, Capt. James Griffiths naturally became interested from early youth in maritime affairs. For more than forty years he has been a pioneer in shipping in the North Pacific. He is one of those early settlers on Puget sound who correctly vizualized the future, and his vision has made him one of the outstanding figures of the Pacific coast.

In the 42 years since he came to Puget sound, Captain Griffiths has seen majestic square riggers give way to wooden steamers, these in turn to coal burning steel vessels, and the latter to oil-burning and diesel overseas freighters of largest tonnage. Commerce on the North Pacific has grown from nothing to its present large proportions and he has been identified with practically every successful shipping enterprise during this long period.

He built at Tacoma the first sea going tug to ply the waters of Puget sound, and as representative of the Northern Pacific railway he handled in this port the first shipments of tea to arrive from the Orient. These came in the barks ISABEL and ARTIZAN and the American ship A. G. ROPES. His firm imported the first cargo of cement, pig iron, salt and general merchandise direct from Europe to Puget sound and it was the agent for the first sailing ships which brought in rails for use in the construction of local railroads which later became units of the transcontinental system.

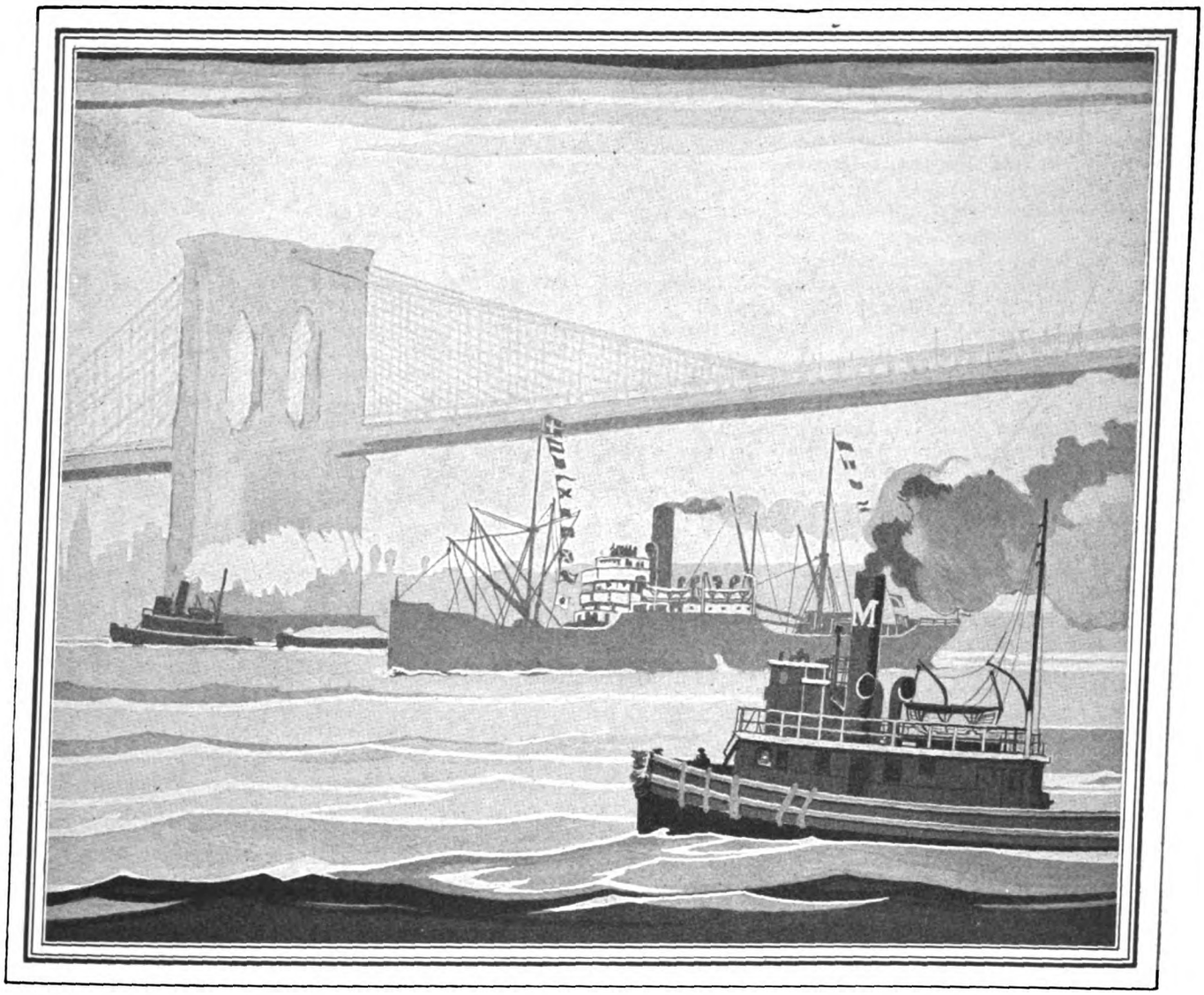
Captain Griffiths was the pioneer in the operation of dismantled sailing ships as barges in tow in North Pacific waters, his first venture of this nature being the barge LUDLOW which carried a cargo of coal to San Francisco in tow of the tug COLLIS. He was manager of the Pacific Barge Co., owners of the famous whaleback steamer CHARLES W. WETMORE which brought the first cargo direct from the Atlantic to Puget sound in 1891. During the rush to Alaska in 1898 he purchased a Japanese steamer, placed her under the American flag as the CENTENNIAL, and fitted her for service to the gold coast.

In more recent years he established regular service from the mines in Alaska and British Columbia to Puget sound ports. His latest success has been in connection with the operations of the Standard Gypsum Co., in moving raw material from San Marcos island, Gulf of California to plants at Los Angeles and Seattle. A steamship and barge service has also been established from the North Pacific to Central and South America, the fleet returning with raw gypsum from Mexican waters.

Perhaps Captain Griffiths' most outstanding contribution to the shipping of the North Pacific was his work in helping to establish regular steamship communication between Puget sound and the Orient. With his native vision he saw the opportunity for building up a great volume of trade across the Pacific. He brought to successful conclusion negotiations between the late James J. Hill as head of the Great Northern railway and the Nippon Yusen Kaisha for a steamship service between Japan and the Northwest thus furnishing through service from Japan to the Eastern section of the American continent.

This service was inaugurated by the steamship MIIKE MARU on Aug. 30, 1896, one of the most memorable dates in Seattle's history, and has functioned ever since, continually improved and augmented as trade with the Orient has grown beyond all expectations.

Born at Newport, Eng. in 1861, Captain Griffiths obtained his education in the Newport national schools



The "Chantier" leaving Brooklyn Navy Yard for Spitzbergen with the Byrd Polar Expedition, May, 1926

HARDLY any marine event of national importance but has had its inspiration in, or was carried out from, the Port of New York.

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MORAN Service

and Turner's Nautical academy. His father was William Griffiths who was superintendent of the Tredegar wharves from 1852 until his death in 1912. James Griffiths began his career at the age of 14 when he was apprenticed to the Tredegar Shipping Co. Four years later he was appointed assistant to the manager of that firm, holding that position until 1885.

Even at this early date, he had his attention directed towards the Pacific Northwest through business relations with George V. Sims, the first European agent of the Northern Pacific railway. They succeeded in interesting Sir William Pearce, a Glasgow shipbuilder, who established a service from British Columbia in conjunction with the Canadian Pacific railway. This service continued until the Canadian Pacific placed its three celebrated "Empresses" on the route in 1891, when it was transferred to Tacoma where for almost twenty years it operated under a traffic arrangement with the Northern Pacific.

Captain Griffiths decided to transfer his sphere of action to the North Pacific. Severing his business relations in England he arrived in Tacoma in 1885, and opened business as James Griffiths & Co., ship brokers, commission merchants and stevedores. Shortly after he organized the Tacoma Steam Navigation Co. During the next ten years his activities covered all the ports of Puget sound and British Columbia, as steamship agent and owner and stevedore. His early connections included many men prominent in shipping circles. From Tacoma he moved his residence to Port Townsend, in the early days an important shipping center, but since 1896 he has resided in Seattle.

In addition to being president of James Griffiths & Sons, he heads the Coastwise Steamship & Barge Co., operating a large fleet of coasting vessels between Puget sound and British Columbia. The Griffiths & Sprague Stevedoring Co. has for years handled all the freight over the Great Northern terminals at Seattle, which has been the landing pier for the Nippon Yusen Kaisha steamers since they first came to Seattle 31 years ago. In 1916 Captain Griffiths acquired control of the pioneer shipbuilding plant of Hall Bros. at Eagle harbor, across the bay from Seattle, and under the firm name of the Winslow Marine Railway & Shipbuilding Co., it has continued its operation as a repair and construction yard. Here, Captain Griffiths has constructed vessels for his own fleet as well as for other owners.

During the world war, he and his various organizations were actively occupied in many directions. His company for several years handled the freight vessels of the powerful Mitsui & Co. fleet, and was a prominent factor in assisting the government's shipbuilding program as well as in the rapid dispatch of enormous quantities of freight which passed through the ports of Puget sound during many hectic months.

Two years ago he purchased the 7500 ton steel steamer S. A. PERKINS from the shipping board for service in the gypsum trade from San Marcos island. During the last winter the steel steamer JAMES GRIFFITHS was acquired from the government and she is now in service in North Pacific waters. The vessels now owned or operated by the various Griffiths corporations number nineteen.

Captain Griffiths has two sons, Stanley Arthur and Albert Vernon, who are associated with him in business after serving an apprenticeship which has fitted them to carry on the many intricate details of a large organization that is constantly expanding.

Prominent as he has been in developing shipping from the practical side, Captain Griffiths has been equally active in creating a play-interest in North Pacific waters. Yachting is his hobby. In his pleasure he is as enthusiastic as he is in business affairs. He was one of the founders of the Seattle Yacht club and served several years as its commodore. He has also served as admiral of the Pacific International Yachting association and in 1926 was admiral of the Pacific Coast Yachting association, embracing the three major inter-sectional associations in these waters. Among yachtsmen he is known from Alaska to Mexico having cruised the entire stretch of coast in his own pleasure vessels. His latest and finest yacht, SUEJA III, diesel powered, was built at his shipyard and is recognized as one of the best equipped and most luxurious pleasure cruisers in Pacific waters. Captain Griffiths finds real happiness and enjoyment in yachting. For years he has been formeost in arousing a sporting rivalry between yachtsmen of the various sections of the North Pacific. In addition to being a devotee of yachting, Captain Griffiths is an enthusiastic farmer.

After forty years of strenuous activity in all phases of shipping, he now finds more time to enjoy his hobbies. He makes extended cruises and in recent years has traveled in foreign countries. However, he is still seriously engaged in business and gives it his personal attention. When away from home he always keeps in touch with his offices.

Surrounded by a host of friends, he always finds satisfaction in helping some younger man to make his way up the business ladder. His has been a life of struggle but he has had the satisfaction of seeing his dreams fulfilled and Puget sound shipping grow from almost nothing to its present wide proportions. From his arrival here, he has had faith in the future of North Pacific and his good judgment and foresight have been fully vindicated. He has always displayed keen business insight, a broad grasp of affairs to which has been added a practical knowledge of his business. He has ever been to the fore in any movement that would further the interests of his home state or of the North Pacific.

In the fullness of his success, Captain Griffiths is as happy as a boy at play, whether he is directing his fleets or cruising for pleasure. Truly he stands forth as one who has accomplished much during the short span of a life, one who has builded wisely and well, not alone for the present but for the future.

Build River Boats

A recent contract received by the engineering department of the Dravo Contracting Co., Neville Island, from the International Petroleum Co., Toronto, Canada, calls for the construction of six steel oil barges for South America for operation on the Magdalena river trade. They are to be each 100 feet long, 30 feet wide, and 6.6 feet deep, and will be equipped with pipe lines and pumps. They will require approximately 600 tons of steel plates. The boats will be delivered down the Ohio and Mississippi rivers, the gulf and the Panama canal.

The company received word that the dredge now under construction for the Ohio River Gravel Co., will be named the Wheeling and will be placed in operation on the Ohio river in the vicinity of Wheeling. It is to be completed in time for operation this summer.

The U. S. S. lighthouse tender WAKEROBIN under construction at the Neville Island yard of the Dravo company is now completed. The company also started the construction of

To Deliver the best that is in any DIESEL

Lubricate with TEXACO URSA OIL

TEXACO URSA Oil is a clear, clean, pale colored oil with the proper viscosity for work. It has an exceptionally low pour test and can be relied upon not to clog oil pipes when exposed to low temperatures.

It clings to the surfaces of cylinder walls and piston rings—maintains compression, enabling easy starting and delivery of FULL power.

Ask to see a sample of this clean, pure, clear oil which has a surprisingly low carbon content.

STOCKS KEPT AT PORTS THROUGHOUT THE WORLD

THE TEXAS COMPANY
MARINE SALES DIVISION
Dept. K5, 17 Battery Place, New York City
OFFICES IN PRINCIPAL CITIES

the first barge out of an order for 14 for the Mississippi River commission, Memphis. They will be each 120 feet long, 30 feet wide and seven feet deep.

To Build Oil Tanker

The Lorain yard of the American Shipbuilding Co. has received a contract for an oil tanker for the Standard Oil Co. of Indiana. The new tanker will be 390 feet in length, will have a beam of 52 feet and will be 25 feet deep. She will have a capacity of 2,000,000 gallons of oil and will take several months to construct. Keels for two oil barges were laid at Lorain, O., on March 28, for the Standard Oil Co. of New York.

Open Cleveland Office

The Vacuum Oil Co. has opened an office in Cleveland at 925 Euclid avenue.

In addition to the Cleveland headquarters the Vacuum Oil Co. is now arranging to open up a chain of agencies in the leading ports of Lake Erie. These additional offices will round out the Vacuum Oil Co. services for supplying gargoyle marine oil in the Great Lakes district.

Astor Builds New Yacht

Vincent Astor vice commodore of the New York Yacht club recently contracted in Germany with Krupps for a new large sea-going diesel yacht. The dimensions are as follows: length overall 263 feet 10 inches; length on the water line 260 feet; beam 41 feet 6 inches; mean load draft, 16 feet.

The machinery will be two Sulzer diesel engines of sufficient power to give a sustained speed of 15½ knots. Fuel, water and stores can be carried in sufficient quantities for long sea voyages and it is the purpose of the design to produce a vessel especially adapted for off shore work while at the same time comfortable for cruising.

The new yacht has been designed by Mr. Theodore E. Ferris in association with Messrs. Cox and Stevens.

Open Atlanta Office

J. W. Lea has been placed in charge of the recently opened Atlanta office of the Power Specialty Co. at 315 Bona Allen building. This office has been established to serve the states of South Carolina, Georgia, Florida and Alabama and will take care of both stationary and marine inquiries for installations of superheaters, economizers, unit coal pulverizers and other products manufactured by the company.

Resignations Accepted

The shipping board on April 21 ratified the action of the trustees of the Merchant Fleet Corp., accepting the resignation of J. Harry Philbin as trustee and vice president of the Merchant Fleet Corp., effective at once. It also ratified the trustees' acceptance of James A. Wilson's resignation as a member of the board of trustees and the appointment of E. A. Kelly as a trustee in his place.

Recent Sales of Ships

THE United States shipping board has approved the sale or reconditioning of the following government merchant tonnage:

GLADYSBEE, steel, steam, single screw tanker of 7500 tons deadweight equipped with reciprocating engine and scotch boilers, to be reconditioned for use in the service of shipping board vessels, as a steam vessel at an expense of $60,750. The GLADYSBEE will probably be chartered after reconditioning while held in reserve for future use.

AMERICAN STAR, steel, single screw, steam, oil burning cargo ship of 7500 deadweight tons, laid up at New York to the Charles Nelson Co., San Francisco, for the sum of $144,500.

MILWAUKEE BRIDGE, steel, single screw, steam, oil burning cargo vessel of 5191 deadweight tons, of the submarine boat type similar to other vessels previously purchased by the same company, to the Matson Navigation Co., San Francisco for $30,000 cash, with agreement to perform certain betterments at a cost of at least $8000.

CRAYCROFT, steel, single screw, steam cargo vessel of the Lake type of 3364 deadweight tons now laid up at Norfolk to John J. Roen, Charlevoix, Mich., for the sum of $25,000 cash and with the agreement to effect certain improvements to the ship.

FEDERAL BRIDGE, steel single screw, cargo steamer of 5291 deadweight tons to Swayne & Hoyt Inc., San Francisco for the sum of $30,000. Payment to be made as follows: 25 per cent cash and the balance over five years. At the time of the sale which was announced March 22, the vessel was laid up in the James river.

World Markets

BACCARAT, single deck steamship, 3797 deadweight tons, 2284 gross tons, for about $81,500 to Japanese buyers.

CAPE ST. MARTIN, single deck steamship, 8756 deadweight tons, 5589 gross tons, for about £24,000 to Mediterranean buyers.

CEUTA, single deck steamship, 2900 deadweight tons, 1741 gross tons, for about £14,000 to German buyers.

ROMAGNE, single deck steamship, 2284 gross tons, for about $80,000 to Japanese buyers.

SENECA, single deck steamship, 3797 deadweight tons, 2284 gross tons, for about $81,500 to Japanese buyers.

WARRIOR, single deck steamship, 5945 deadweight tons, 3495 gross tons, for about £12,000 to French buyers.

BREMA, double deck steamship, 8400 deadweight tons, 5170 gross tons, for about £15,000 to Greek buyers.

HAVENSIDE, single deck steamship, 5350 deadweight tons, 3108 gross tons, for about £28,400 to Cardiff buyers.

VITTORIA, single deck steamship 4560 deadweight tons, 2944 gross tons, for about £13,500 to Greek buyers.

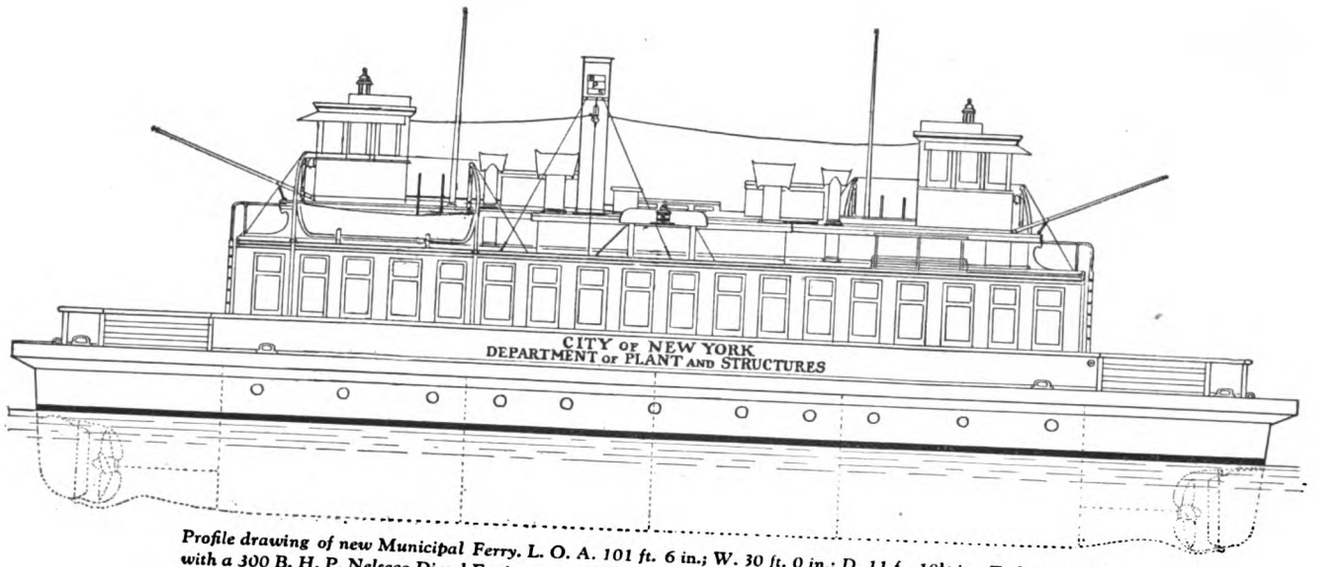
S. S. Elkton Lost at Sea

The S. S. ELKTON of the American Pioneer line, which was about midway between the Philippine Islands and the Island of Guam when last heard from on Feb. 16, 1927, was on April 7, 1927, declared by the shipping board to be a total loss. It is believed that the vessel foundered while passing through the center of a typhoon and that she sank almost without warning, with all hands on board. She was one month overdue at Honolulu when declared lost.

The ELKTON was commanded by Capt. E. C. Schnellhardt, of Seattle, and the crew consisted of 37 officers and men. The members of the crew and the residences of their nearest kin were as follows:

William A. David, Boston; A. Johansen, W. Muller, H. Wiswell, Brooklyn, N. Y.; C. F. Ruber, Lewiston, Pa.; Hans Janasen, Tacoma, Wash.; Gustav Glenburg, Huitenen, Finland; P. L. Schrickel, Edgewood Pl., Riverside, Calif.; E. R. Midgette, North Carolina; E. Hanson, Everett, Mass.; William Flynn, Newark, N. J.; William Richards, unknown; D. J. Owen, Blakeley, Ga.; W. J. Sullivan, Cleveland; Joseph J. Vella, New York; A. R. Addison, Tarrytown, N. Y.; Gail Heffelfinger, unknown; Oscar L. Bergland, North Easton, Mass.; William McNamara, Elizabeth, N. J.; Pegerto Barrio, Ponce, P. R.; M. M. Endic (Indic), Manila, P. I.; M. A. Adame, Iloilo, P. I.; J. M. Rosario, unknown; A. Farez, Iloilo, P .I.; Louis Galgano, New York. Signed on at Manila: Inocencio Separas, Torribia Tumal, Hugh Lonit, F. Mortinez; signed on at Iloilo: A. Schraner, Faustino Martinez, James Drummond, Perfecto Favilla; signed on at Shanghai: P. McPartland, D. Hughes, John Anderson, Arthur Pierce.

The Hooven, Owens and Rentschler M. A. N. double-acting diesel engine will be installed in the shipping board steamer SEMINOLE at the Tietjen and Lang plant of the Todd Ship Yards Corp., Hoboken, N. J. The installation will cost $436,000. In this vessel, as in the YOMOCHICHI and WEST GRAMA, passenger accommodations will be omitted, which materially reduced the cost of conversion.



Profile drawing of new Municipal Ferry. L. O. A. 101 ft. 6 in.; W. 30 ft. 0 in.; D. 11 f.. 10⅜ in. To be powered with a 300 B. H. P. Nelseco Diesel Engine, type 6 MIR-18. Capacity, 160 passengers (seated) and 5 automobiles

The First Municipal Diesel-driven Ferries

CONTRACTS were signed recently by the New York Department of Plant and Structures for two Diesel-powered ferries... the first of the type to be owned and operated by the City of New York.

These ferries are being built by the Todd Dry Dock Engineering and Repair Corporation at the Tebo Yacht Plant, Brooklyn, N. Y., under the direction of Commissioner Albert Goldman. It is probable they will be put in service in the East River early this summer.

Each of these vessels will be powered with a 300 B. H. P. Nelseco Diesel Engine of the latest direct-reversible, mechanical-injection type.

These engines are similar in design to the 24 Nelseco Diesels recently ordered by the Southern Pacific Railroad Company for use in ferry boats on San Francisco Bay and the 12 Nelseco Diesels now in use on new Electric Ferries in New York harbor.

The selection of Nelseco Diesels for the first Municipal Ferries is only natural in view of the ruggedness, simplicity, and proven efficiency of these dependable power units.

Nelseco engineers will gladly help you with your power problems and will furnish astonishing figures on the low operating cost of Nelseco Diesel Engines. Write for Pamphlet MR.

NEW LONDON SHIP & ENGINE COMPANY
Groton, Conn., U. S. A.

Chicago Representative
H. JACOBSEN
25 North Dearborn Street

New York Sales Office
247 Park Avenue, New York City

West Coast Representative
KING-KNIGHT CO.
Seattle, San Francisco, Los Angeles

NELSECO

Original licensees from and collaborators with M.A.N. since 1910

Reduce Accidents

(*Continued from page* 30)

was always visible from any position where the worker might be located. These particular boards are used to carry a striking safety slogan poster. These posters are changed at regular and frequent intervals. All boards carry the same safety slogan poster simultaneously, so that a systematic safety suggestions is kept constantly before the men.

These safety posters which greet a worker whenever he glances up serve as a mental tap on the shoulder to remind him to exercise care in the preservation of his own and his fellow workers' safety.

That the Southern Pacific Steamship lines has been strikingly successful in this pioneer safety program in the shipping industry is evidenced by the figures which compare their safety record before and after systematic safety work was undertaken:

During the first four and a half months in which the safety work was conducted—April 1, to August 11—a total of 72 time-losing accidents occurred, causing a total loss of 1407 days. During the same three months in 1925, before any safety work had been attempted, 103 time-losing accidents occurred, causing a loss of 5093 days. In other words, during the very first three months in which the safety program was active, a net gain of 3686 days was made.

The figures given for accidents in the 1925 period do not include one fatality. According to standard insurance methods in estimating the number of days assumed to be lost by a fatality, we should add 6000 days to the 5093 days lost in 1925. This would bring the actual net saving of days to a total of 9686 days.

Not ony do these figures indicate a striking reduction in the actual number of lost time accidents, but the figures also indicate an even more distinctive reduction in the severity of accidents. The average number of days lost per accident in 1925 was 49 days, without even taking into consideration the fatality. Taking into consideration the fatality which occurred in 1925, the average lost time per accident would have been 107 days. In 1926, the figures under the "safe work regime" indicate that an average of only 19 days were lost for each time-losing accident.

This record shows what can be done when a group of men set out seriously to prevent accidents, even in an industry in which it has always been assumed that a great many accidents are bound to happen.

Gives Up Shipbuilding

Cramps to Maintain Subsidiaries

THE historic shipyard of William Cramp & Sons Ship and Engine Building Co., Philadelphia, has been forced by lack of business to abandon shipbuilding. A decision to discontinue shipbuilding came after J. Harry Mull, president, had conferred with Secretary of the Navy Wilbur in Washington. Curtailment of the naval construction program and continued depression in merchant shipbuilding were blamed. Secretary Wilbur, at Mr. Mull's request, permitted Cramps to surrender a contract taken last year for the construction of a 10,000-ton scout cruiser, the SALT LAKE CITY. The cruiser, now 7 per cent constructed, will be completed by the American Brown Boveri Electric Corp., Camden, N. J. Three merchant ships now under construction at the shipbuilding plant of the Cramp company will be completed, Mr. Mull stated, with a reorganization of the corporation by proposed issuance of $2,500,000 worth of bonds. This would take care of the construction and satisfy all outstanding commitments, he said.

William Cramp & Sons Ship and Engine Building Co. was incorporated March 26, 1872, and succeeded to the business of William Cramp, established in 1830. Capital stock consists of $15,232,500 of outstanding stock of $100 par, of which the American Ship & Commerce Corp. owns $11,314,500. The balance sheet as of Dec. 31, 1925, showed total assets of $22,617,923.

The announcement has created much uncertainty among the 3000 workmen employed at the shipyard and 2000 others who are temporarily laid off. Many come from families who have worked two or three generations for Cramps. It was believed, however, that to most of the workmen jobs would be given with the company's subsidiaries. The subsidiaries will continue to build engines and hydroelectric and other equipment. These nonmarine manufacturing activities were segregated last year in a holding company, the Cramp-Morris Industrials Inc. In a statement Mr. Mull said:

"The manufacturing operations of the company's important subsidiaries, the De La Vergne Machine Co., I. P. Morris Corp., Pelton Water Wheel Co., Federal Steel Foundry Co., Cramps' Brass & Iron Foundry and Engine Manufacturing Co., will be continued. These operations include the manufacture of diesel engines, castings and hydraulic and other machinery. The business of the subsidiary companies is in a sound and prosperous condition and is capable of considerable expansion. A portion of the shipyard properties will be utilized in the operations of the subsidiary companies, and it is understood that other plans are in contemplation for the balance of the shipyard and its facilities."

March Lake Levels

The United States Lake survey reports the monthly mean stages of the Great Lakes for the month of March as follows:

Lakes	Feet above mean sea level
Superior	601.31
Michigan-Huron	578.48
St. Clair	573.17
Erie	571.10
Ontario	245.71

Lake Superior was 0.01-foot lower than in February and it was 1.12-foot higher than the low March stage of a year ago. Lakes Michigan-Huron were 0.23-foot higher than in February and they were 0.94-foot higher than the low March stage of a year ago. Lake Erie was 0.13-foot higher than in February and was 1.08 feet higher than the low March stage of a year ago. Lake Ontario was 0.40-foot higher than in February (since 1860 the March level has averaged 0.26-foot higher than February); and it was 1.57-foot higher than the low March stage of a year ago, 0.44-foot above the average stage of March of the last ten years.

Frank L. Johnson assistant superintendent of the Munson Steamship lines died March 23 at his home in Bloomfield, N. J. Mr. Johnson was a graduate of Yale university and after joining the Munson organization was sent to Havana where he served as Cuban representative for 17 years.

Toledo Shipbuilding Company Inc.

TOLEDO - - - OHIO

Builders of the World's Record Cargo Ship

Steamer William K. Field

604 ft. Long, 60 ft. Beam, 32 ft. Depth. Deadweight Tonnage 12000.

OVER half a million tons of freight carried—forty six cargoes of ore and coal delivered in seven months and seventeen days by the steamer William K. Field.

This remarkable performance earned her the title, "Champion Freight Carrier of the World". During the season 1924 on the Great Lakes she registered a total of 552,014 tons. *An unprecedented accomplishment!*

The William K. Field is owned and operated by Reiss Steamship Company, Cleveland, Ohio. Her type of construction permits rapid loading and discharge of cargo. This was an important factor in her record breaking performance.

Builders and Repairers of Ships and Engines

British Marine Affairs

(*Continued from page* 36)

of North America, as against 17.55 per cent in the corresponding period of last year. The total clearances from British ports in January and February 1927 were 9542 vessels of 9,632,924 tons, as compared with 9570 vessels of 9,945,277 tons in the first two months of 1926. Of these clearances, 12.35 per cent went to the Atlantic coast of North America this year, as compared with 15 per cent last year.

Coal Exports Nearly Normal

Exports of British coal have nearly recovered their volume of 1926 for the time of year. The figure for February was 4,172,856 tons, as compared with 4,340,006 tons in February 1926. For the period ending Feb. 28 this year, exports were 8,265,735 tons, as against 8,488,048 tons last year. Coal shipped for the use of steamers engaged in foreign trade was 1,307,143 tons in February 1927, as compared with 1,306,467 tons in February 1926. These figures show that the effects of the coal stoppage are gradually disappearing. The total value of exports of British goods, exclusive of bullion and specie, has not, however, attained the level of a year ago. The amount for February htis year was £63,744,-121 ($308,000,000), as against £76,-035,306 ($369,000,000) in February 1926. For the first two months of this year, total exports are valued at £129,027,407 ($627,000,000), as compared with £148,157,828 ($720,-000,000) for the corresponding period of last year. The drop in exports for the period ending February 1926 this year, as compared with the same period last year, was mainly due to reduced shipments of cotton yarns and manufactures, iron and steel and manufactures and vehicles, including locomotives, ships and aircraft. The value of imports for February 1927 was £93,851,869 ($455,000,000), as against £96,885,123 ($470,000,000), and for the first two months it was £207,452,124 ($1,000,000,000) this year and £214,603,699 ($1,020,000,-000) last year. There was a considerable increase in the value of imports of coal, iron and steel and manufacturers, oils, and fats, and a substantial decrease in foodstuffs, raw cotton and rubber.

Launch Lake Freighter

The S. S. HARRY COULBY, building at the Lorain, O. plant of the American Ship Building Co. is scheduled for launching April 30. This vessel is being built for the Interlake Steamship Co., Pickands & Mather Co. managers, Cleveland and will be the largest bulk freighter, in capacity, on the Great Lakes. She is 630 feet in length overall, 8 feet shorter than the CARL D. BRADLEY and she has the same beam of 65 feet; the depth molded is 32 feet. On a draft of 20 feet the capacity will be 13,800 tons.

British Marine Exhibit

The annual shipping, engineering and machinery exhibition will be held at Olympia, London, from Sept. 8 to 24. This exhibition will include a special section for motorboats, yachts, small craft, internal combustion engines and various accessories. Primarily the exhibits are representative of shipbuilding, shipping, marine, electrical and general engineering, yachts, motorboats and engines.

A large proportion of the exhibits will be shown under working conditions. The exhibits will cover all the equipment and accessories used in ships, from the smaller craft to large vessels. In connection with the heavy engineering trades will be shown such products as compressors, steel and iron castings and forgings, electrical machinery, engines of all types, pneumatic tools, and machine tools for various purposes. Welding in its various forms will be an interesting feature.

Contract for Cruisers

On April 15 the United States navy department awarded contracts for the construction of six 10,000-ton cruisers.

Two are to be built by the Newport News Shipbuilding & Drydock Co. One by the Bethlehem Shipbuilding Corp., Fore River plant, Quincy, Mass.; and one to the American Brown Boveri Electric Corp., Camden, N. J. Two will go to United States navy yards, one to the Puget Sound and the other to the Mare Island navy yard, both on the Pacific coast.

Bids were submitted by the private shipyards and estimates by the different navy yards. These six cruisers complete the program of eight intended by congress. The two first of the eight were placed last July, one, the SALT LAKE CITY, with the William Cramp & Sons Ship and Engine Building Co. and the other, the PENSACOLA, with the New York navy yard. It is understood that the Cramp company has asked to be released from their contract to complete the SALT LAKE CITY which is about one-twentieth completed. It is further understood that the navy department has allowed the Cramp company to give up this work and that a contract to complete the cruiser has been awarded to the American Brown Boveri Electric Corp. at a figure not to exceed the original.

The contract prices for each of the cruisers to be built at the private yards lie between $10,000,000 and the $11,000,000 limit set by congress. There is, of course, a variation in the prices among the several concerns depending upon differences in detail of the conditions set down in the bids. One of the encouraging features in placing these contracts is that an aggregate amount of approximately $65,-000,000 will go to the shipbuilding industry. Many, however, are of the opinion that all six of the cruisers should have been placed in private yards and that by so doing much needed support to shipbuilding and an actual saving of about $6,000,000 according to one authority, might have been accomplished.

Launch Liner Shawnee

The sixth vessel in the program of new shipbuilding undertaken by the Clyde line during the past two years, the SHAWNEE was launched at Newport News Shipbuilding & Drydock Co. on Patriots day, April 19.

The SHAWNEE, a sister ship of the IROQUOIS, was sponsored by Miss Elenor Hoyt, daughter of Mr. and Mrs. Richard F. Hoyt of New York. The maids of honor were, the Misses Katharyn Watson and Elizabeth, Hovey of Chestnut Hill, Mass.

The SHAWNEE and IROQUOIS when completed will be the largest and most luxurious vessels in the Atlantic coastwise service. The other steamers in the new fleet are the ALGONQUIN, launched Sept. 9, last year and her three sister ships the MOHAWK, SEMINOLE and CHEROKEE all built within the past two years. A description of the IROQUOIS will be found in the April number of MARINE REVIEW.

The Sprague portable hoist business of the General Electric Co. has been taken over by the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y. The Shepard company will continue to manufacture Sprague hoists and a division has been established known as the Sprague Hoist division of the Shepard Electric Crane & Hoist Co. with offices at 30 Church St., New York City. N. A. Hall of the General Electric Co. has been placed in charge of the new Shepard division.

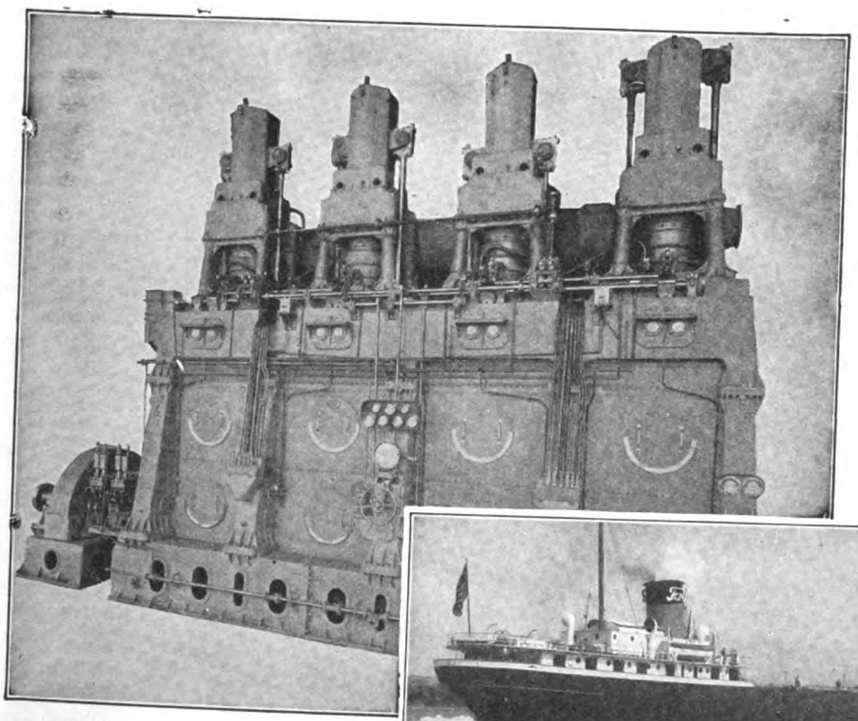
SUN SHIPBUILDING & DRY DOCK COMPANY

Builders of

SUN-DOXFORD DIESEL ENGINES

The Engines that Power

"HENRY FORD II" *and* "BENSON FORD"



3000 S. H. P. Sun-Doxford Diesel Engines power the two motorships, "Henry Ford II" and "Benson Ford".

M. S. "Henry Ford II"

SUN-DOXFORD *and* JUNKERS PATENTS

Main Office and Works:
Chester, Pa. - U. S. A.

Philadelphia Office:
Finance Building

New York Office:
Cunard Building

Reduce Fuel Bill

(*Continued from page* 34)

to add the complications and expense of so-called improvements of which the real value is either debatable or minus.

Improvement in Construction

There is opportunity, however, for the builder to contribute something in the way of better workmanship than has been the rule for some years. Especially will this be true if types of engines employing other than the crude valves and valve-gear of current use are adopted. There is no doubt either that much can be accomplished by better foundry control and denser and harder mixtures for cylinders, pistons, valves, and cylinder and valve-chest covers, in fact all those parts exposed to steam of varying temperature. This is particularly true as regards the high-pressure end. It has been abundantly proven that the softer and more open the iron the more rapid the rate of condensation, or heat exchange, and if the surfaces are machined the condition is aggravated. Its probable effect on the difference in performance of identical ships has been already touched upon. The suggestion does not necessarily involve higher material costs; it might even be the reverse, although it might slightly affect machine tool time.

There remains the question of speed which is so old and so well understood and has been so often and so thoroughly proven that one rather wonders how it persists. Perhaps it will be with us always, partly because the subject is attractive, partly because of the facility with which it lends itself to specious arguments and partly because there are actually trades and routes where it is advantageous or even necessary. Moving bulk cargoes over short routes such as the Great Lakes and at low rates offering no premium for quick delivery cannot possibly, over a period of time such as a navigation season, show other than a penalty for speed. The time and distance are too short and the rates too low. Occasions do occur where a little extra speed may advance a ship's turn or perhaps avoid a delay and this is the principal argument urged, but over a period of time, working with other ships and under the same port conditions the faster ship cannot possibly gain more than the actual hours cut off the running time and everything must work out exactly and at all times to do even that. The difference in running time is easily calculated and summed up over a period must accomplish delivery of sufficient additional cargo to at least liquidate the costs of the higher speed over the whole period. If it did no more than that it would still be a net loss by reason of added wear and tear. But it can't be done.

It is of interest to note that the speed question seems to be recurrent. When the steel bulk freighter made its entree in the late eighties speed was apparently considered as among its most important characteristics and for a time in fact it dominated the others. An examination of the marine publications of about that time will disclose that there existed a strong rivalry as to speed records. However, even in those days of low fuel costs it became apparent that speed was costly and practically all of those vessels underwent modifications which resulted in speed reductions. In some cases ships were lengthened; in others the engine and boiler powers were reduced and in still others both measures were adopted, the end always, however, justifying the means.

Run at Economical Speed

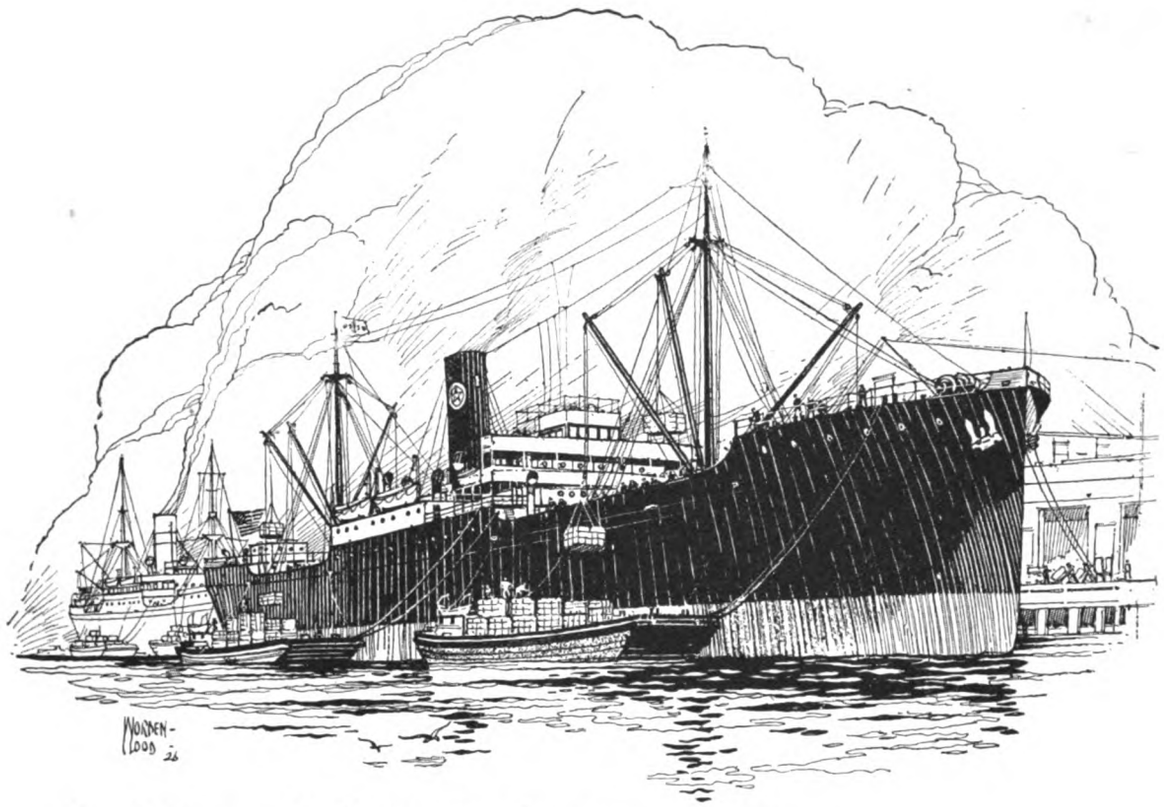
There is for every ship, as every shipbuilder knows even if others do not, a best and most economical speed. This speed for our ships has actually been determined by conditions into which speed did not enter, that is to say the necessity for giving the ship sufficient power to make an able ship, or in other words to take care of herself in bad weather and make her handy in maneuvering. This powering has been the result of long experimentation; some of it very costly. It has gone to both extremes and the acceptance of what appeared to give the necessary qualities naturally produced and fixed the rate of speed which is normal to that ship. It does not mean that the speed possible is the most economical but it means that since the powering is fixed by other conditions the most economical speed is that which is obtainable with the given ship at the lowest cost. Driving the ship beyond that speed immediately reduces earnings. It just happens also that for our ships the needful power about corresponds with that for best efficiency, using the word in its technical sense. On very long voyages there is opportunity for a slight increase in speed produced in the lower cost brackets to add earnings, but as the power cost increases rather faster than the cube of the speed it ought to be readily apparent that between the added power costs on the one hand and reduced cargo deadweight on the other the possibility of increased earnings soon disappears. There is, however, a sort of twilight zone in which lie possibilities of better speed without increase of power through fining the lines but only at the cost of reduced deadweight. The zone is bounded by very narrow limits and can only be accurately determined either by model basin tests or extremely careful observation of actual ships. Naturally the latter method is exceedingly costly and practically out of reach, involving construction and operation of the complete ship and careful separation of propulsion costs from all other factors.

E. B. Sadtler's Proposal Analyzed

An example of the misleading arguments frequently encountered and which owe their origin generally to lack of accurate knowledge of actual conditions is found in the suggestions of E. B. Sadtler in the November MARINE REVIEW. Mr. Sadtler (who should not be confounded with Dr. Sadler) cites a specific ship for which he assumes an *average* speed of 12 miles (we may ignore the knots, since nautical miles are not employed in lake navigation) per hour for a round trip distance of 1650 miles and a voyage period of seven days. The distance corresponds with the Duluth-Ashtabula mileage and the period is fair enough. Now let us consider the figures used in support of his suggestions. He says if the speed is increased one mile per hour the voyage period will be reduced to six days. Since the reduction in voyage period due to higher speed cannot exceed the reduction in hours under way, it will be apparent that the running time is shortened 10½ hours, not 24 as claimed, and this moreover provided the whole distance can be negotiated at the speeds indicated which is far from the fact, since, as everyone familiar with the trade knows, at least 400 miles of the total are subject to shoal water and controlled navigation impediments.

Abundant evidence, not hearsay nor general statements, is at hand demonstrating that good-weather time for able 12-mile ships on the voyage indicated is 144 hours, or six days. This running time would then be shortened to 5.56 days and the voyage period to 6.56 days and the number of gained trips in the 210-day season assumed would be exactly two and not five as claimed. It can under no circumstances be anything different unless changes occur elsewhere than in speed.

If now the deadweight is reduced



A World-Wide Freight Service By American Ships

SAILING under the American flag, and operated for the United States Shipping Board, great fleets of cargo vessels maintain speedy and efficient freight services from all the leading American ports to all parts of the world.

These services have proven highly beneficial to American manufacturers in opening up new and untapped markets for their merchandise and adding to the volume and variety of their foreign trade. Experienced shippers use them regularly and recommend them with enthusiasm.

Speedy passenger ships of the United States Lines are included, sailing from New York to principal European ports. In addition to carrying passengers, the United States Lines ships, led by the famous Leviathan, provide an exceptional express freight service.

For complete information on either freight or passenger service consult "Schedule of Sailings," a comprehensive publication issued by the Traffic Department, or write direct.

United States Shipping Board Merchant Fleet Corporation

WASHINGTON, D. C.

to 9500 tons as indicated, by fining the lines in order to get the increased speed, we have a season capacity in 32 trips of 304,000 tons as against the 330,000 with the 11,000-ton ship for 30 trips, a reduction of 24,000 tons, against which Mr. Sadtler hopefully promises a fuel reduction of 1930 tons. No operator will feel any interest in this showing which involves a direct loss in earnings of around $10,500 instead of a gain even with the better economy assumed, to say nothing of the added investment in the power plant.

It is of interest also to consider the estimated relative carrying capacity which involves a loss of 1500 tons per trip. The difference in displacement between a block coefficient of 0.83 for the specified ship and the 0.875 for the proposed ship, on a draft of 18 feet 6 inches, 842 long tons, the difference between this figure and 1500 tons, or 658 long tons, must therefore reside in added machinery weights. The finer hull certainly weighs no more than the full; it is not in fuel because the average fuel per trip is estimated at about 85 tons less than for the full ship. Since approximately half of this saving should be available for increased cargo weight the difference to be accounted for becomes about 690 tons. The total machinery weights of the specified ship with water in boilers is of the order of 425 to 450 tons, therefore the machinery weights of the proposed ship would be of the order of 1100 to 1150 tons, which is of course absurd.

The gain in speed, even with the finer block and higher power may be safely called highly optimistic. Whatever else may be lacking in data with regard to ship operation, figures as to indicated horsepower displacement and speed are not. They exist in abundance and have been repeatedly checked and compared and it can be said with perfect confidence that 2700 indicated horsepower will not produce 12.93 miles with the proposed ship, on a load draft corresponding to the 11,000-ton cargo of the specified ship. With most favorable conditions, in deep water and with perfect steering it might produce 12.6 real miles, not the log miles or conversation miles on which unfortunately too many assumptions and assertions are grounded. Even then it will be found that the propulsive coefficient is exceedingly high; so high that it is frequently disputed by those unfamiliar with the lake bulk freighter.

Similarly with regard to the fuel costs. The figure used for the specified ship is manifestly that for all purposes; it corresponds too closely with other data to be anything else. Mr. Sadtler then builds up an estimated saving which is based on *power for propulsion only*. It would be a new thing to find auxiliary consumption with turbines to be any less than with reciprocating engines, so that applying an average correction for this, the estimated saving, also corrected for actual number of trips and loss of cargo capacity, finally disappears altogether.

Considering the magnitude of the problem and its costs the dearth of accurate information is almost incomprehensible. The cost of fuel for the lake fleet is of course little more than a guess, but, exclusive of wooden tonnage, carferries, tugs and nondescripts, and short-run passenger vessels, the yearly fuel bill runs to several million tons. It is to be noted that over 30 years since a well known engineer in referring to observations regarding a certain ship drew attention to the necessity of economy with fuel costing $2.25 per ton!

Saving in Fuel Bill Possible

It is perfectly safe to say that of the total fuel bill 10 per cent could be saved without impeding in any way the general cargo movement. It is equally safe to say that, regarding the fleet as a whole, whatever expense it might be necessary to incur to effect such a result would be extinguished within a year or two.

The first essential is of course accurate information which is, practically, nonexistent. Figures as to fuel per mile, which seem to satisfy so many, are, for the purpose suggested, as valuable as a last year's bird's nest. Such figures are only interesting from an engineering standpoint when they apply to exactly similar ships, in exactly the same trim, at exactly the same speed, over the same course, in comparable weather and with perfect steering. Such conditions are not impossible with proper co-operation except perhaps the last, but even this can be approximated by selection.

The creation of a fund which would provide for the collection of such information and assessed against each ship on a power or tonnage basis, would be easy in any fleet of fair proportions, and if the work is intelligently done and applied the returns would be manifold.

The Kearfott Engineering Co. formerly located at 95 Liberty street New York recently moved to new offices in the Roebling building 117 Liberty street. The new telephone numbers are Cortlandt 7580 and 7581.

Opening of Navigation

The Cleveland and Buffalo Transit Co., Cleveland, opened navigation between Cleveland and Buffalo on April 14.

Canada Steamship Lines Inaugurate New Line

That the business men of eastern Canada are doing an ever increasing business in the prairie regions west of the Great Lakes, is evidenced by the announcement of the Canada Steamship lines, that it will this year inaugurate a direct package freight service from Montreal to the head of the lakes. General merchandise, including goods arriving at Montreal from the United Kingdom and Continental ports will be carried.

This new service will give weekly sailings from Montreal and will be in addition to the service now operated from Toronto and Hamilton to the Canadian head of the lakes. Due to the fact that only one call, a short stop at the Soo is to be made, the running time from Montreal will be shortened by three days.

The Canada Steamship lines has for some time recognized the necessity of giving the consignees and shippers the best possible water transportation and with this end in view, four modern steel steamers have been constructed for this service during the past two years. These vessels are fitted with 'tween decks, which allow the most careful handling of package freight.

Nine modern steel steamers will be in the service to the head of the lakes at the opening of navigation. About the middle of August the service will be augmented by two new ships which are now under construction at the plant of the Midland Shipbuilding Co. The addition of these two ships will allow two sailings each week from each terminus.

Appoint Traffic Manager

Eugene E. O'Donnell, vice president and general manager of C. H. Sprague & Son Inc. recently announced that Percy L. Stuart has been appointed New England traffic manager for the American Republics line, operating a fleet of 12 modern freight steamers between Boston, New York, Philadelphia, Baltimore, Norfolk, Savannah and Jacksonville to the east coast of South America, the operating management of which has been allocated to this company by the United States shipping board.